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COMPUTERWORLD

DEC restructuring takes form

Plan to focus on vertical industries, products and service business units

BY MELINDA-CAROL BALLOU
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. is expected later this week to offer a glimpse into horizontal product, sales and services groups as well as vertical business units that it hopes will bolster its sagging fortunes, sources close to the company said.

DEC is said to be structuring product-specific business units along the lines of components, storage products, PCs and multivendor systems integration.

Industry-specific customer business units in the offing include discrete manufacturing, process engineering, natural resources (oil and gas), financial and professional services and consumer retail and communications groups.

Central services

Both types of organizations would be serviced by a horizontal group that is likely to include engineering, manufacturing, sales and services.

DEC has attempted to create industry-related business groups in the past, but they included a mishmash of products driven by engineering rather than customer concerns.

At least theoretically, the new structure will enable the business units to go outside DEC for products or distribution channels if that seems feasible or to use the services of horizontal groups within the company.

Chief Executive Officer Robert Palmer may discuss elements of the restructuring — in addition to accelerating layoffs and plant closings — at the company's annual meeting this week in Boston, sources said.

DEC announced last week that it will close plants in Bur-

Continued on page 20

USL closes in on distributed view

BY MARYFRAN JOHNSON
CW STAFF

SUMMIT, N.J. — As users grow increasingly impatient waiting for the Open Software Foundation's technologies to yield workable products for managing distributed networks, Unix System Laboratories, Inc. is quietly preparing to jump ahead of the competition.

Although no product has been announced, USL officials said last week that they plan to deliver, by next fall, source code to their Unix System V vendors for building a suite of system management tools called Distributed Manager for Unix System V, Release 4 (see story page 7).

End-user products built by USL licensees such as Siemens/Nixdorf Information Systems, Inc. are expected before the end of 1993 — some months ahead of the anticipated early 1994 delivery of the OSF's Distributed Management Environment.

"As long as [USL and OSF] stay compatible, this is great news for users. This is competition for DME where there's never been any before," said Norton Greenfeld, director of Unix services at Computer Intelligence/Infocorp in Acton, Mass. "Talk about high drama — I think this will shake up the whole market."

OSF founding members IBM, Hewlett-Packard Co. and Digital Equipment Corp. are incorporating DME-based software components into future versions of

Continued on page 7

IS ponders fit for workgroup Windows

BY ROSEMARY CAFASSO
and CHRISTOPHER LINDQUIST
CW STAFF

NEW YORK — Microsoft Corp.'s first big pitch to the workgroup computing market could go far with small businesses and end users, but it was not scoring many hits with corporate information systems executives last week.

While several IS managers said Windows for Workgroups is compelling enough to deserve a closer look, they also said they were not yet sure how it would mesh with or add value to their networks and productivity tools.

"We are looking for workgroup technology, but we want to find something we could use companywide," said Joseph Herrin, director of systems development at Joseph E. Seagram & Sons, Inc. in New York. "This seems to be geared toward smaller workgroups."

Noting the concerns raised by some IS executives, a Microsoft official said the company was not surprised because "the benefits of the product are not that well-known yet."

"People are going to take some time to evaluate it," said Russell Siegelman, Windows for Workgroups product manager, adding that Microsoft

Continued on page 8

Bank revs outsourcing pact

BY MARK HALPER
CW STAFF

ATLANTA — Stung by bad commercial real estate loans and changes in processing costs, Bank South Corp. has restructured its 10-year outsourcing pact with IBM subsidiary Integrated Systems Solutions Corp.

The move is another indication that long-term mega-outsourcing deals signed in the late 1980s are bending to pressure from business changes brought on by the recession and corporate restructuring.

Another client, Hibernia National Bank of New Orleans, has restructured its accord to give IBM additional responsibility for software applications.

In addition, Eastman Kodak Co. and IBM are rapidly approaching a four-year marker calling for them to consider major changes — up to and including parting ways.

Bank South's case is typical of the hardship facing banks. Assets have fallen from about $5.5 billion to $4.8 billion over the course of the ISSC contract. In this time, it has also replaced top

Continued on page 20

A new world

Some changes at Bank South that prompted a restructuring of its IBM outsourcing deal:

- Processing has increased even though the size of the bank has decreased.
- Cost-of-living increase projections were too high.
- Bank is implementing distributed processing and wanted to tap other vendors for products and services.

Standards fights vex users

BY ELISABETH HORWITT
CW STAFF

SAN FRANCISCO — With the words "openness" and "standards" on their lips and competition in their hearts, vendors last week sallied forth to win users' approval at the Interop '92 and Electronic Mail Association conferences.

Openness and standards mean different things to different industry sectors. There is one thread of consistency, however: Every vendor that professes to support open standards wants its own approach to dominate.

For example, the Internet, minicomputer, mainframe and PC local-area network communities have their favorite network protocols and are ill-disposed "to play, technology-wise and business-wise, with each other," said Craig Burton, president of The Burton

Continued on page 15

Slow motion

GUIs can make the desktop computing environment a friendlier place to work, but users gave their GUI products mediocre satisfaction scores in providing speedy performance

See Buyers' Scorecard, page 48

Product	Score
Sun's OpenLook	7.5
IBM's OS/2	7.3
Microsoft's Windows	6.9
OSF's Motif	6.9

Maximum possible score: 10

NEWSPAPER

INSIDE

Wayne Bell of Dr Pepper/Seven-Up pushes portables, groupware to speed sales and better track inventory depletion. Page 6.

Unix CASE to get boost via Andersen/HP client/server accord. Page 4.

Lotus' Jim Manzi outlines E-mail coexistence. Page 14.

Product Spotlight — There's more than one kind of work-flow software. Page 85.

EXECUTIVE BRIEFING

November 2, 1992

A COMPREHENSIVE GUIDE TO THIS WEEK'S NEWS

DISTRIBUTED COMPUTING

COMPETITION HEATS UP in distributed systems management, where **Unix System Laboratories** is vowing to help its Unix System V, Release 4 vendors get to market with standardized products ahead of **Open Software Foundation** founders **IBM, HP** and **DEC**. *Page 1*

IBM'S MAINFRAME CUSTOMERS are looking elsewhere for distributed database solutions, citing corporate strategies that require answers that are not based on big iron and the lack of third-party support for IBM's distributed database architecture. *Page 4*

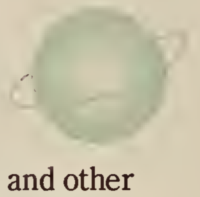
OUTSOURCING

BANK SOUTH, a charter **IBM** outsourcing customer, has renegotiated its 10-year deal to lower costs and give it more leeway to use non-IBM gear as it launches its own re-engineering project driven by a distributed computing design. *Page 1*

SUPER ENGINEERS

"SUDDENLY, SOMEBODY SAID, 'Hey, what if we tried this . . . ?' " That comment, by **Novell** chief scientist Drew Major, describes the moment of discovery scientists experience in the course of their careers — if they're lucky. Major and five other scientists from **Apple, IBM, TI, NCR** and **Sun** are driving the breakthrough thinking in vendor companies. Their work targets virtual reality, nanotechnology and intelligent networks, among other areas. *Page 93*

MANAGEMENT



IS HEADS FED UP with skyrocketing software purchase and maintenance costs are pressuring vendors to adopt new pricing schemes. Many are also practicing software asset management and other techniques to keep software costs down. *Page 99*

THE U.S GENERAL ACCOUNTING OFFICE is debating when the plug should be pulled on an IS project that is clearly failing. *Page 103*

IS MANAGER Jeff Olszewski considers the difficulty of managing staff stress in these tough times. Let people vent a certain amount of frustration, and don't make your stars shoulder all of the burden, he advises. *Page 33*

INFORMATION SECURITY PROFESSIONAL Howard Glassman cautions downsizing enthusiasts not to forget that applications running on smaller platforms also need to be secured and supported. *Page 33*

TO BE SUCCESSFUL IN IS, get out of it for a while, advises Gerry Long of **Summit Information Systems**. He says you can gain a better cross-functional perspective by playing the role of the user. *Page 109*

PC HARDWARE

HAVING FOUND a name for its next-generation chip, **Intel** outlines its plans for 25 power-efficient I486 models. *Page 37*

NATIONAL SEMICONDUCTOR aims at the business market with a multifunction communications card. *Page 38*

ASKING THE RIGHT QUESTIONS when ordering by mail saves more than money. Tops on the list: Does the advertised price buy a complete system? How quickly are replacements sent? Will it use generic parts? *Page 114*

ENTERPRISE NETWORKING

▶Users' dreams of interoperability remain distant as vendors escalate standards wars at Interop '92. *Page 1*

▶**IBM** moves toward a more open, affordable and TCP/IP-friendly version of its Advanced Peer-to Peer-Networking. *Page 14*

▶Financial services firm **J. P. Morgan** fills in the domestic LAN interconnect portion of its telecommunications outsourcing plan with frame-relay services from **CompuServe**. *Page 57*

▶Users get their choice of methods for integrating **TCP/IP** and **SNA** installations. *Page 57*

▶Banks continue to invest heavily in telecommunications projects, although they're beginning to reallocate how much they spend on leased-line vs. public networking. *Page 60*

▶**Sun** adds ISDN, frame relay and PPP products for its SPARCstations. *Page 64*

▶Systems managers are ready to implement integrated network management systems despite a lack of standards. *Page 64*

▶**MCI** announces what is said to be the first SMDS offering from a long-distance carrier. *Page 16*

ELECTRONIC MAIL

▶**Lotus** Chairman Jim Manzi grudgingly moves closer to **Microsoft**'s E-mail spec but buries the good news in a scathing indictment of Microsoft. *Page 14*

▶Users at last week's **Electronic Mail Association** conference were encouraged that the warring E-mail API camps are calling a truce but cited other messaging hurdles as more relevant. *Page 14*

What is this man doing?
See page 12

▶Wireless global messaging kicks off for mobile users, and **Lotus** reveals some of its plans for a wireless CC:Mail gateway. *Page 16*

▶Work-flow software can reduce the application backlog, minimize requests for changes and give you a voice in your company's business. *Page 85*

PC OPERATING ENVIRONMENTS

▶Some IS executives are not sure Windows for Workgroups will be a good fit with their networks and productivity tools. *Page 1*

▶**IBM** says it is considering an OS/2 for workgroups for release next year. *Page 8*

▶Windows goes to Wall Street to drum up some support from the financial community, indicating **Microsoft**'s increasing desire to be taken seriously in vertical markets. *Page 8*

▶**Sun**'s OpenLook tops user satisfaction ratings of GUIs, while Windows and OS/2 receive virtually the same overall score but have strengths in different areas. *Pages 48, 49*

▶Users seem to like **IBM**'s concept of a streamlined OS/2 2.0 but only if the operating system is losing fat, not function. *Page 37*

PORTABLE COMPUTING

▶Under pressure, **Toshiba** pushes to regain the lead in the 486 notebook market and plans a pen-based machine. *Page 12*

▶**Dr Pepper/Seven-Up** aims to arm its field personnel with groupware-equipped laptops to protect its shelf and tap new turf. *Page 6*

▶**Olivetti** will use Comdex/Fall '92 to show a subnotebook that lets users record voice messages. And **Toshiba** may show notebooks with built-in paging capability. *Page 39*

▶**Gateway**'s Nomad and **Compaq**'s LTE Lite/25 PC notebooks receive generally good reviews with minor criticisms of Nomad's use of plastic and the LTE's battery life. *Page 44*

▶**AT&T** is pushing low-power, high-performance chips aimed at mobile voice and data systems. *Page 41*

APPLICATION DEVELOPMENT

▶**Andersen Consulting** and **HP** enter the Unix CASE ring with the first module of an integrated workbench for building client/server applications. *Page 4*

▶**Sybase** creates a tools division, tries to forge a new generation of object-oriented products. *Page 75*

▶**Microsoft**'s Visual Basic deserves a closer look from professional programmers, columnist Jesse Berst says. *Page 41*

▶A new **Smartstar** client/server development tool reduces SQL coding by up to 90%, users say. *Page 75*

▶Tool-maker **Centerline Software** has added C++ and other features to its ObjectCenter workbench. *Page 77*

▶An automated library for reusable software is now available for the commercial sector. *Page 76*

Mainframe software

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- Information Builders unveils a smaller, less expensive way to start an information warehouse. .... Page 70
- Stratus holds firm — for now — with product transitions, as the fault-tolerant market softens. .... Page 67

Unix

- Pacific Gas & Electric develops an integrated set of disaster management applications on Unix workstations, including some tentative plans to roll them out on both X Window System PCs and Unix servers. .... Page 51
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- MathWorks and a German vendor of real-time hardware have joined forces to take some of the risk and uncertainty out of mechanical design. .... Page 52

LANs

- The Canadian elections agency served up 295 LANs in seven days while preparing for last Monday's elections. The trick was superior organization and stable LAN technology. .... Page 10
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- Concurrent comes back from a painful restructuring with nearly four dozen new fault-tolerant products. Its users say they like what they see. .... Page 24
- While they charge into the open systems world, with Unix, Hewlett-Packard officials are taking great care not to alienate the loyal HP 3000 users. .... Page 67
- Wang Labs' annual users conference allows presentations from non-Wang vendors for the first time, while the bankrupt firm pushes imaging technology. .... Page 70

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- HP's Lew Platt takes the helm this week looking to maintain mini and workstation momentum while pumping up PCs. .... Page 121
- The Ask Cos.' new CEO becomes president of the Ingres database division and says he wants to speed up a makeover of Ingres' sales and marketing. .... Page 24
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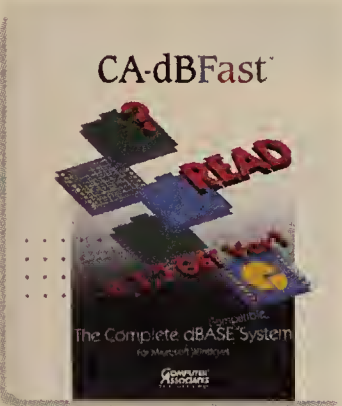
Attention All dBASE Users: Your Windows Have Arrived.



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1992 W 100 WINDOWS MAGAZINE ANNUAL WIN AWARD

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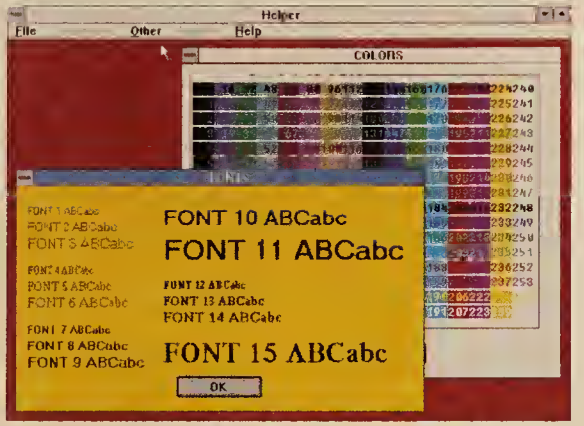
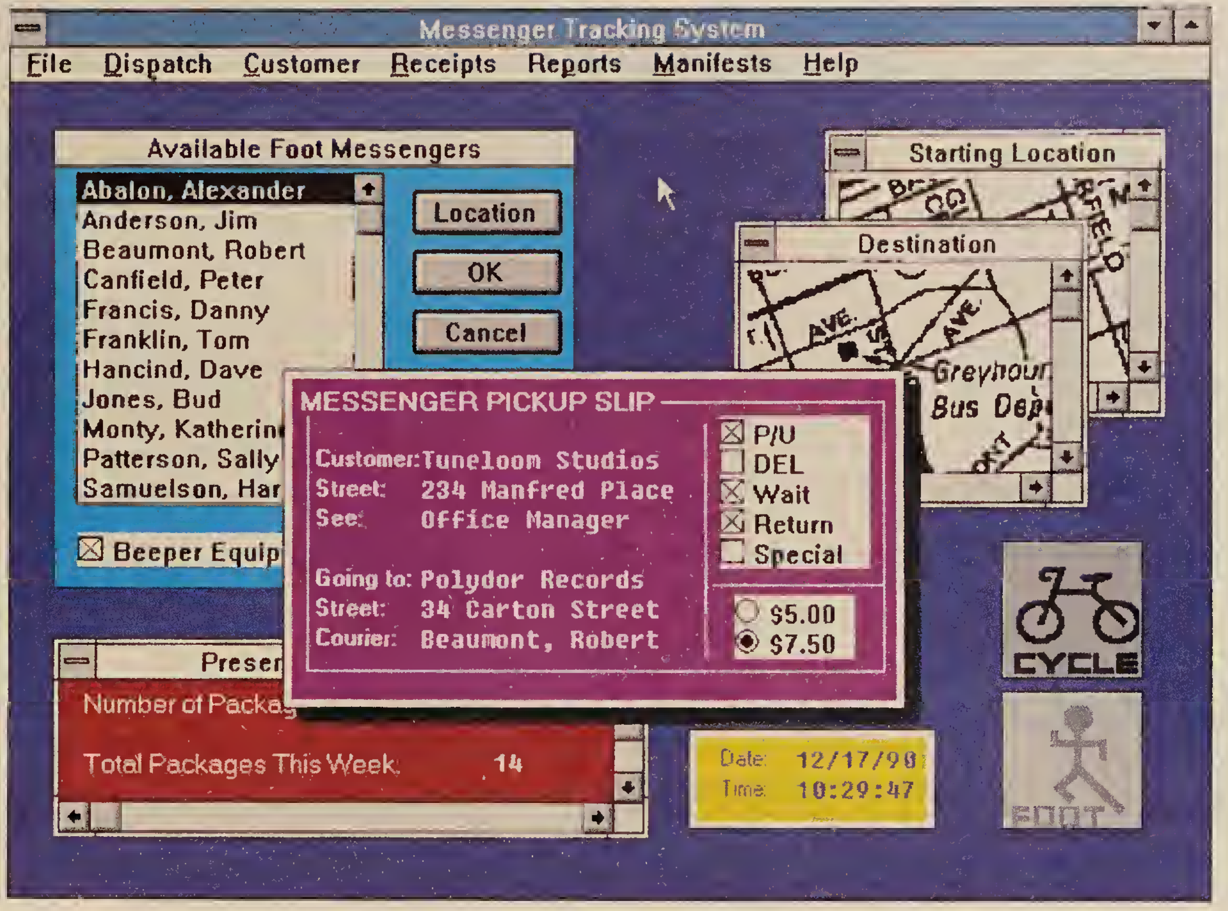


Your applications will really come to life with multiple colors and fonts.

Liven them up with multiple, movable windows, pull-down menus, check boxes, dialog boxes, radio buttons, push buttons and bitmap pictures.

MICROSOFT® WINDOWS™ COMPATIBLE

CA-dBFast also helps you create new dBASE programs quickly and easily.



Abalon, Alexander
Anderson, Jim
Beaumont, Robert
Canfield, Peter
Francis, Danny
Franklin, Tom
Hancind, Dave
Jones, Bud
Monty, Katherin
Patterson, Sally
Samuelson, Har

☒ Beeper Equip

MESSENGER PICKUP SLIP

Customer: Tuneloom Studios
Street: 234 Manfred Place
See: Office Manager

Going to: Polydor Records
Street: 34 Carton Street
Courier: Beaumont, Robert

☒ P/U
☐ DEL
☒ Wait
☒ Return
☐ Special

○ $5.00
● $7.50

Presen
Number of Packag
Total Packages This Week: 14

Date: 12/17/90
Time: 10:29:47

CA-dBFast helps you create powerful, graphical database applications quickly and easily with pull-down menus, check boxes, radio buttons and even bitmap images.

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Marcam to market IBM Mapics

BY KIM S. NASH
CW STAFF

HYANNIS, Mass. — Big-time IBM midrange software maker Marcam Corp. is about to get bigger, but the expansion could be pricey and could come at the expense of corporate control.

The $70 million company last week agreed to give IBM 20% of its 8 million outstanding shares of stock in return for worldwide responsibility for the midrange version of Mapics, IBM's market-leading manufacturing package.

Marcam will have to make additional payments to IBM of undisclosed sums based on Mapics' future profits. Plus, IBM gets a seat on Marcam's six-member board.

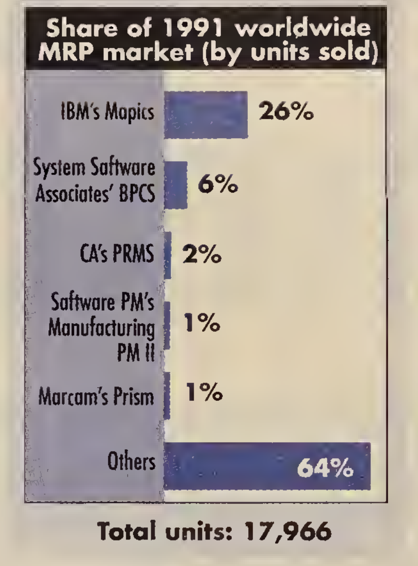
"The question is whether Marcam has bitten off more than it can chew," said Bill McSpadden, chief executive officer at Plantwide Research Group, a manufacturing market research firm in North Billerica, Mass. More than 20,000 users worldwide run Mapics, and Marcam "isn't used to dealing with an installed base that large," he said.

Marcam already peddles its own package, Prism, which is aimed at the process manufacturing market, such as chemical and pharmaceutical firms. Mapics, meanwhile, caters to industrial companies such as consumer goods makers.

Mapics users aren't likely to be affected immediately, as IBM will continue to support them. However, Marcam will take over further development of the decade-old product line, likely adding process-oriented features.

Blue's image

IBM's Mapics commands 26% of a market that's divided by nearly 500 vendors



Total units: 17,966

Source: Plant-wide Research Group

Jerry Goldman, computer-integrated manufacturing project leader and MIS director at Sybron Chemicals, Inc., was enthusiastic about the deal, which is subject to Marcam stockholder approval. Extensive process manufacturing tasks could be worked into future versions, Goldman said.

Right now, the Birmingham, N.J.-based company relies on a third-party firm to add process tasks to Mapics, but Marcam's expertise in this area might materialize in Mapics down the road, he explained.

Marcam Chairman Paul Margolis agreed, saying, "We're going to drive [Mapics] as a strategic offering."

IBM drew $60 million in Mapics license fees last year, but profits from the line have dropped off significantly during the past few years, according to analysts. "There are tons of other smaller software makers that are continuously adding features to their products. IBM couldn't keep up," said John Borelli, computer-integrated manufacturing analyst at Gartner Group, Inc. in Stamford, Conn.

Bob Williams, vice president of IBM's worldwide industrial sector division, said Mapics "customers will be better served" under this setup, with Marcam in charge of development.

The package fills a hole in Marcam's product line that prevented it from competing with other System/3X and Application System/400 software makers, including System Software Associates, Inc. in Chicago and Pansophic Systems, Inc., which is now part of Computer Associates International, Inc.

HP, Andersen offer CASE tools for Unix

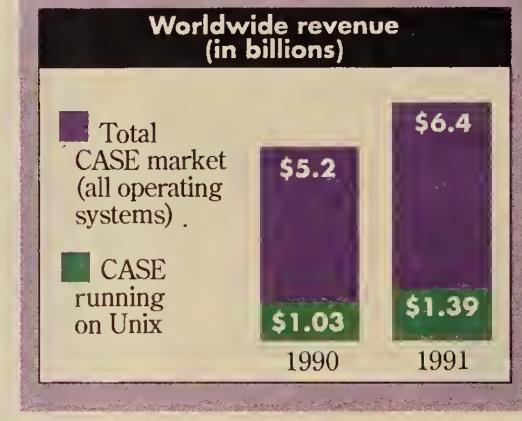
BY KIM S. NASH
CW STAFF

CHICAGO — Hewlett-Packard Co. and Andersen Consulting confirmed plans to announce this week a computer-aided software engineering (CASE) workbench designed to build client/server applications for commercial Unix systems.

Unix CASE is already jumping, with companies such as Intersolv, Inc. in Rockville, Md., and Smartstar Corp. in Goleta, Calif., recently rolling out client/server generators for Unix platforms.

Making the CASE

Unix is slowly building inroads into the CASE tool market



Source: Dataquest, Inc.

CW Chart: Stephanie Faucher

"This is the next big wave, and it's a wave users want," said Tony Picardi, an analyst at International Data Corp. in Framingham, Mass. Many traditional CASE vendors are trying to reposition themselves as the number of pioneers gutsy enough to adopt the first round of Cobol-oriented CASE products shrinks, he said.

Not the last deal

Andersen and HP officials said last week that the joint development and marketing deal is the first of several such partnerships. The company said it will team with other Unix systems vendors, including Digital Equipment Corp., in agreements soon to be announced.

The new product line is not based on HP's Softbench framework for Unix development but is anchored by Andersen's Foundation for Cooperative Processing (FCP) tool set. Andersen has several client/server success stories under its belt with FCP, "so it makes sense for HP to want to take advantage of that," Picardi said. The state of North Carolina, for example, is using FCP to construct several statewide systems to run in client/server mode [CW, Sept. 28].

Florida Power Corp. is beta-testing Foundation HP/UX Server Option, the first module in the line, due to ship in first-quarter 1993. Server Option was designed to generate client/server applications for HP 9000 Series 800 servers. The St. Petersburg, Fla.-based utility is almost one year into a three-year, $48 million project to migrate 20-year-old mainframe-based applications to a client/server platform.

A starter kit with the product and training will be priced at $50,000.

Companies such as The Brick Warehouse Corp. may be interested in the tool set. The furniture retailer in Edmonton, Alberta, has been looking for months for an integrated workbench for building Unix systems, according to Robert Gauf, manager of MIS research and planning.

Gauf said he has experimented with Teamwork from Cadre Technologies, Inc. and Software through Pictures from Interactive Development Environments, Inc. but ran into trouble integrating them with existing IBM PL/1 and Oracle Corp. systems. If he decides to halt that effort and rebuild applications from scratch, "any tool we choose will have to have a global repository and be able to generate applications from the bottom up. If not, it's not worth anything to me," he added.

Lack of DRDA support sends IBM users elsewhere

BY JOHANNA AMBROSIO
CW STAFF

ARMONK, N.Y. — Some of IBM's mainframe customers are looking elsewhere for distributed database solutions, citing corporate strategies that require answers not based on big iron, as well as the lack of actual third-party support for IBM's distributed database architecture.

That architecture — the Distributed Relational Database Architecture (DRDA), introduced in June 1990 — was intended to allow people to access relational database management systems from IBM and others. Some 25 third-party vendors have promised to support DRDA, although only a handful have actually implemented it. Four IBM database products — DB2, SQL/DS and the database managers in OS/2 and OS/400 — support DRDA in implementations delivered this year.

But DRDA does not appear to be catching on in all 5,500 or so DB2 shops. "We have no need for DRDA because all our new database development will be on Unix platforms," said Monica Simpson, database manager at BASF Corp. in Parsippany, N.J. "Open systems is our direction." At this point, IBM lacks an RDBMS for its AIX version of Unix.

Although some of BASF's corporate data will continue to reside in DB2 for a while, "most of our major production systems are in IMS and VSAM," Simpson said. She said the search is on to replace the corporate decision support system, now under DB2, with a Unix-based product.

Likewise, the Salt River Project in Phoenix is looking for DRDA alternatives, said John Chatfield, senior principal analyst. "The issue is that only a couple of vendors have any real products that use DRDA. We have Oracle and Sybase and other products that we need access to, and some of the other distributed database architectures, including Microsoft's, have some real products that meet these needs."

That is an issue for other customers as well, observers said. " The power tools that people are using to develop database applications are all on Windows," said Chris Bird, president of Model Systems Consultants, Inc. in Stamford, Conn. "IBM is hurting because they didn't foresee that clearly enough," and DRDA is losing steam as a result.

At a glance

IBM's Distributed Relational Database Architecture (DRDA)

Introduced: June 1990

Goal: To help users access relational data in IBM and other databases.

Status: Some 25 vendors have promised to support DRDA, with 10 actually licensing the technology, but so far only one has introduced a product that incorporates the architecture. IBM began delivering DRDA functionality in some database releases this year.

CW Chart: Janell Genovese

Stick to their guns

But IBM managers defended the tack they are taking with DRDA, saying it is becoming better accepted and that it is technically superior to other available database connections.

Some 10 vendors including Ingres Corp., Oracle Corp., Novell, Inc., Borland International, Inc. and Informix Software, Inc. have licensed DRDA and have promised to build the specifications into their products. So far, however, only XDB Systems has delivered a DRDA product. But Object Technology International, Inc. is slated to do so later this month.

About 15 other software vendors have said that they will introduce applications that are DRDA-capable, although these vendors have not licensed DRDA.

"Major players have said they will adapt our protocols," said Don Haderle, IBM's director of strategy and architecture in the enterprise database solutions group. "If this thing had fallen flat, we'd be having a different conversation."

He added, "It's not just about database access. You can already buy gateways to connect into DB2 from the workstation, but the question is the overhead that those gateways require. We're trying to provide a standardization, a common protocol, so customers have fewer things to manage rather than more."

Still, Chatfield said, "The question is: What is real, and what is real in the near time frame?"

TWO-PHASE COMMIT
SYBASE VS. ORACLE7

PROGRAMMATIC AND PROPRIETARY
MORE THAN 50 LINES OF CODE

```
/ * as before if anyone fails then abort all, otherwise commit */
}
/ *
my
DE
DE
co
{
}
```

```
two-phase()
{

/* open up two servers and a commit service */

    dbproc_server1 = dbopen(login, databasename1);
    dbproc_server2 = dbopen(login, databasename2);
    dbproc_commit = open_commit(login, NULL);

/*
** prepare data for each command buffer and select a database to
** use, then start distributed transaction on commit service
*/

    commid = start_xact(dbproc_commit, application, "my_xact", 2);

/*
** build transaction name and begin transactions on different
** servers
*/

    build_xact_string("","" commid, xact_string);
    dbfcmd(dbproc_server1, "BEGIN TRANSACTION %s",
    xact_string);
    dbsqlexec(dbproc_server1);
    dbfcmd(dbproc_server2, "BEGIN TRANSACTION %s",
    xact_string);
    dbsqlexec(dbproc_server2);

/* perform various updates and then.... */

/* if there is a failure on one abort all of them */

    if (return_code == FAIL)
    {
        abort_xact(dbproc_commit, commid);
        dbcmd(dbproc_server1, "ROLLBACK TRANSACTION");
        return_code = dbsqlexec(dbproc_server1);
        dbcmd(dbproc_server2, "ROLLBACK TRANSACTION");
        return_code = dbsqlexec(dbproc_server2);
        if (return_code != FAIL)
        {
            remove_xact(dbproc_commit, commid, 1);
        }

    dbexit();
    exit(ERREXIT);
    }

/* otherwise prepare to commit */
dbcmd ( dbproc_server 1, "PREPARE TRANSACTION");
dbsqlexec (dbproc_ server 1);
dbcmd (dbproc_ server 1);
dbcmd ( dbproc_server 2, "PREPARE TRANSACTION");
dbsqlexec ( dbproc_ server 2 );
```

SYBASE code example from A Guide To SYBASE and SQL Server by D. McGoveran with C.J. Date. ©1992 Addison-Wesley Publishing Co., Inc. Reprinted with permission.

AUTOMATIC AND STANDARD
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```
UPDATE SAVINGS
SET S_BALANCE = S_BALANCE - 250.00
WHERE S_DEPOSITOR = 'JONES';

UPDATE CHECKING
SET C_BALANCE = C_BALANCE + 250.00
WHERE C_DEPOSITOR = 'JONES';

COMMIT WORK
```

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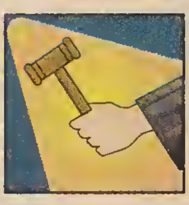
NEWS SHORTS

Confirm suit goes to mediation



A Texas judge last week assigned one of the lawsuits in the Confirm reservation system debacle to mediation. The suit, brought by AMR Information Services, Inc., was assigned to Dallas-based mediator Harlan Martin. The judge set an Oct. 4, 1993 trial date in case mediation fails. AMR's suit alleges that its partners in the bungled Confirm project — Marriott Corp., Hilton Hotels Corp. and Budget Rent A Car Corp. — withheld funds, missed deadlines, made poor staffing assignments and, in some cases, withdrew from the project in violation of their contract. Meanwhile, the lawsuits keep flying around Confirm's remains. Last week, a former Amris employee, Rob Geller, sued AMR, AMR Chairman Robert Crandall, AMR information systems chief Max Hopper, former Intrico Vice President Charles Biebighauser, and the Intrico partners, for defamation. Geller claims the defendants smeared his name and made disparaging remarks to his new employer, MCI.

……

Ex-IBM exec joins Synon

Former IBM general manager Richard Goldberg is expected to join Synon Corp. this week. He will oversee daily operations worldwide. Goldberg, who took advantage of IBM's early retirement program in July, comes to Synon two months after IBM took a 10% equity stake in the $50 million Larkspur, Calif.-based application development firm. William Grabe, a partner in venture capital firm General Atlantic and a former marketing executive at IBM, will become co-chairman along with Chris Herron, a Synon founder.

……

Microsoft to use CDDI

After 18 months of industry talk about putting 100M bit/sec. Fiber Distributed Data Interface technology over copper wiring, Microsoft Corp. has announced plans for a significant "Copper-DDI" network. The vendor said last week that it will leverage Crescendo Communications, Inc. adapter cards and concentrators to link desktops to critical Intel Corp. I486-based servers clustered in the corporate data center.

……

Mac gains network connections

Apple Computer, Inc. announced pricing and availability for products that connect the Macintosh over a wide range of networks. AppleTalk Connection for Macintosh is said to include data link drivers for LocalTalk, Ethernet, Token Ring and AppleTalk networks. TCP/IP Connection for Macintosh is said to provide all software needed to put a Macintosh on a Transmission Control Protocol/Internet Protocol network. Both products include an agent that enables them to be managed by Simple Network Management Protocol systems, Apple said. Availability is scheduled for spring 1993.

……

Short takes

Oracle Corp. late last week revealed that it had shipped initial copies of its next-generation relational database management system, Oracle 7. The product, which debuted June 15, had been expected at select customer sites in October. Volume shipments are expected early next year. . . . **Northgate Computer Systems, Inc.** will offer a five-year warranty on its new line of servers and disk arrays. . . . **AT&T** and **Go Corp.** said Go Mail users will now be able to link to AT&T Mail through AT&T EasyLink Services. . . . **NEC Technologies, Inc.** lowered prices on several of its UltraLite notebooks and PowerMate Express desktop systems by up to 41%. . . . **AST Research, Inc.** cut prices by up to 31% on its Bravo line of low-cost PCs. Base price is now $1,400 for a 486-based system with a 120M-byte hard drive and a monitor. . . . **Advanced Logic Research, Inc.** introduced the PowerFlex Flyer/SmartLine family of low-end desktop computers starting at $799. The line is aimed to compete with **Compaq Computer Corp.**'s ProLinea and **IBM**'s Personal System/ValuePoint lines. . . . **NCR Corp.** shipped its first low-cost PC, the 3225. Based on the AT bus and a 25-MHz 80386SX processor from Intel, a base model including an 80M-byte hard drive will cost $967. The machine represents the first in NCR's line of low-cost PCs.

More news shorts on page 16

Adding portables to the pop

Dr Pepper/Seven-Up hopes to beef up selling time with groupware, laptops

BY JOANIE M. WEXLER
CW STAFF

DALLAS — The Dr Pepper Co./Seven-Up Co. has set its sights on becoming the first soft-drink maker to equip its entire field sales and marketing staff with portable PCs sporting customized groupware applications.

The project is aimed at beefing up the amount of time field personnel spend selling and allowing them to resolve inventory depletion and other issues immediately in the high-turnaround industry, said John G. Stevenson, vice president of information systems.

John Stevenson *hopes reps will be more responsive*

The project will center around a suite of customized groupware applications jointly produced by Dr Pepper/Seven-Up and either Lotus Development Corp. or Data One. The soft drink maker has already done preliminary development work with both vendors for a prototype presentation to be made to a Seven-Up automation committee in December.

While the project's green light still hinges on the prototype, high-level backing means "the chances are very good" that an eight-person pilot will roll out early next year. The pilot will involve sales reps running the gamut of computer literacy, said Wayne L. Bell, manager of information services. The full 280-user project is slated to kick in by year-end 1993.

The Seven-Up side of the $620 million company has gained the sponsorship of Seven-Up Chief Operating Officer Francis Mullin and Senior Vice President of Bottle/Can Sales Robert Quirk for a pilot laptop program to begin early next year, Bell said.

Support from top executives is apparently driving many large information systems projects. A recent study of 150 companies by Houston-based consultancy Currid & Co., for example, determined that nearly all successful IS projects are championed by non-IS high-level executives, noted Currid President Cheryl Currid.

Mike Cunningham, MIS supervisor at Dr Pepper/Seven-Up, said his staff examined other soft drink companies, and "we saw a lot of handheld units used by full-time auditors for gathering trucking route information. But there wasn't much automation for the reps."

Dr Pepper/Seven-Up has a big incentive to strive for technical innovation with laptops and other technologies such as electronic data interchange (see story below): It is a middle-size soft drink player without the marketing clout of the cola kings to guarantee its presence on store shelves and restaurant taps.

To protect its turf, Stevenson said he intends for the program to "turn the stacks of paper reps carry around in the trunks of their cars into Shake 'n' Bake analysis tools," allowing sales reps to be more responsive and inciting distributors and bottlers to continue doing business with them.

Currid, who was formerly director of applied information technology at Coca-Cola Foods, said "it sounds like Dr Pepper is doing this right."

Currid noted that the soft drink industry is "traditionally slow on the technology wave because of its distribution model. You can't manage what you can't measure."

She explained, for example, that because soda is purchased from local distributors instead of directly from sales representatives, it is difficult for an individual rep to know what he has sold.

Emphasis on action

Some groupware applications under construction at Dr Pepper/Seven-Up are aimed at allowing salespeople to act on information while a promotion is in progress instead of reacting later. For example, "sales managers are saying their people are continually getting hammered on an out-of-stock condition during a promotion. That's like death for a field guy," Cunningham said.

One time-relieving goal is the automation of about 200 reports that salespeople currently have to deal with manually, Bell said.

Paperwork is a common productivity-inhibitor for sales representatives in the consumer products industry, Currid said. "It is not uncommon for a salesperson in this industry to spend 20% of his time on administration," she said. "In fact, many will take Fridays off just to do their reports."

After the Seven-Up rollout, "we'll tackle the Dr Pepper side," Bell said. He explained that both companies continue to be run as separate operations despite their late-1980s merger.

Cunningham would like to see the solidification of laptop standards for form factors, external bus, docking stations, batteries and adapters before deciding on a hardware vendor.

"We need to protect the company's investment; we see about a 20% turnover in PCs each year," he said. "The soft drink maker is considering pen-based technology because of its ease of use for spot checking bottles and recording information on the fly."

Sign on the dotted line

Dr Pepper/Seven-Up is facing a possible legal glitch with one of its most strategic technology projects today: getting electronic data interchange (EDI) procedures in place with its 700 bottlers and other distributors.

An issue surrounding the validity of electronic signatures on credit-card-like receipts for deliveries is confounding the currently 5% EDI-ready company as it embarks on a major expansion of its electronic exchange of business documents, said Wayne L. Bell, manager of information services.

"We need to find a mechanism to make that electronic document as legally binding as that signature on the paper document," he said.

The issue is imminent for the major EDI initiative that Dr Pepper/Seven-Up has undertaken with Pepsi, one of its distributors, that is slated to kick in next month.

The two companies intend to automate roughly 400,000 paper transactions a year, Dr Pepper/Seven-Up said. Currently, the company is recruiting the assistance of its legal department to help resolve the signature validity issue, Bell said.

Dr Pepper/Seven-Up said it intends to be up on EDI with distributors in 21 sales territories by the end of the first quarter of 1993 with about 30%, or 2.5 million, transactions on-line. John G. Stevenson, vice president of information systems, said the quicker cash flow and rebate system EDI documents afford will give distributors extra incentive to continue doing business with the company.

STEFANIE MCCANN

USL closes in on distributed view

CONTINUED FROM PAGE 1

products, such as IBM's NetView/6000, HP's OpenView and DEC's MCC Director.

"We expect to be delivering real products and applications before OSF, but we are looking to be sure we don't split the industry," said Richard Bevis, a USL marketing manager. "The work OSF is doing is ground-breaking and will help everyone."

Compatibility is clearly the crucial factor for users, said Steven Jenkins, a member of the OSF's end-user steering committee and a software architecture engineer at the Jet Propulsion Laboratories in Pasadena, Calif. "If this USL product is going to be DME-compliant, then that's great. The last thing we need is competing de facto standards."

Based on Tivoli Systems, Inc.'s Management Environment, USL's Distributed Manager will offer an integrated set of applications for managing basic system resources such as licensing, system and storage device monitoring and network distribution of software updates. The USL licensees — none of which have yet publicly committed to the product — will have the option of offering either various pieces of Distributed Manager or the entire package.

"What USL is doing is getting a product that works to market sooner," said Rikki Kirzner, an analyst at Dataquest, Inc. in San Jose, Calif. "At least it's something people can start building on."

A coherent, standardized approach to systems and network management has long topped the wish list in the open systems user community. Yet even the most ardent supporters of the OSF's efforts are weary of waiting for useful products.

"You can only talk about how neat something is going to be for so long, and then you have to deliver something," Jenkins said.

Analysts said USL, a onetime rival Unix camp and now a cordial ally of the OSF, is taking a different approach to the same problems DME hopes to solve. As long as USL adheres to the specifications and standard interfaces that define DME, analysts said, there should be no problems connecting with future DME products.

However, the OSF views the rival product as nothing more than "a step toward DME," said Jon Gossels, a business area manager at the Cambridge, Mass.-based OSF. "They're getting to market with a different product. It's not multivendor, heterogeneous integrated management like DME."

An initial drawback to Distributed Manager will be its capability to manage only System V, Release 4 Unix systems instead of a mixture of Unix and non-Unix platforms. However, USL officials stressed that they will "actively pursue" opportunities to port the software to other platforms. The reference platform for Distributed Manager is an Intel Corp.-based PC running System V, Release 4 Unix.

Bevis said USL also plans to ensure integration of Distributed Manager with management software applications and network operating systems already in place at information systems shops.

A significant difference between Distributed Manager and DME is that USL's offering does not require installation of the OSF's Distributed Computing Environment (DCE) as an underlying platform. DCE can be thought of as basic network plumbing, while DME is more like the sink and cabinets that make use of the underlying pipes.

"We're both addressing the same user problems: how to manage distributed systems and get user service levels to where they should be, at an acceptable cost," Bevis said. Gossels cautioned that the lack of a DCE base means Distributed Manager cannot interoperate with DME. Bevis agreed but stressed that USL plans to add DCE support (and thus DME compatibility) to a later release of Distributed Manager.

One-upmanship

USL's Distributed Manager for Unix System V, Release 4 will integrate applications from several partners:

Host management: Tivoli Systems

License management: Gradient Technologies, Inc.

Distributed software installation: Unisys Corp.

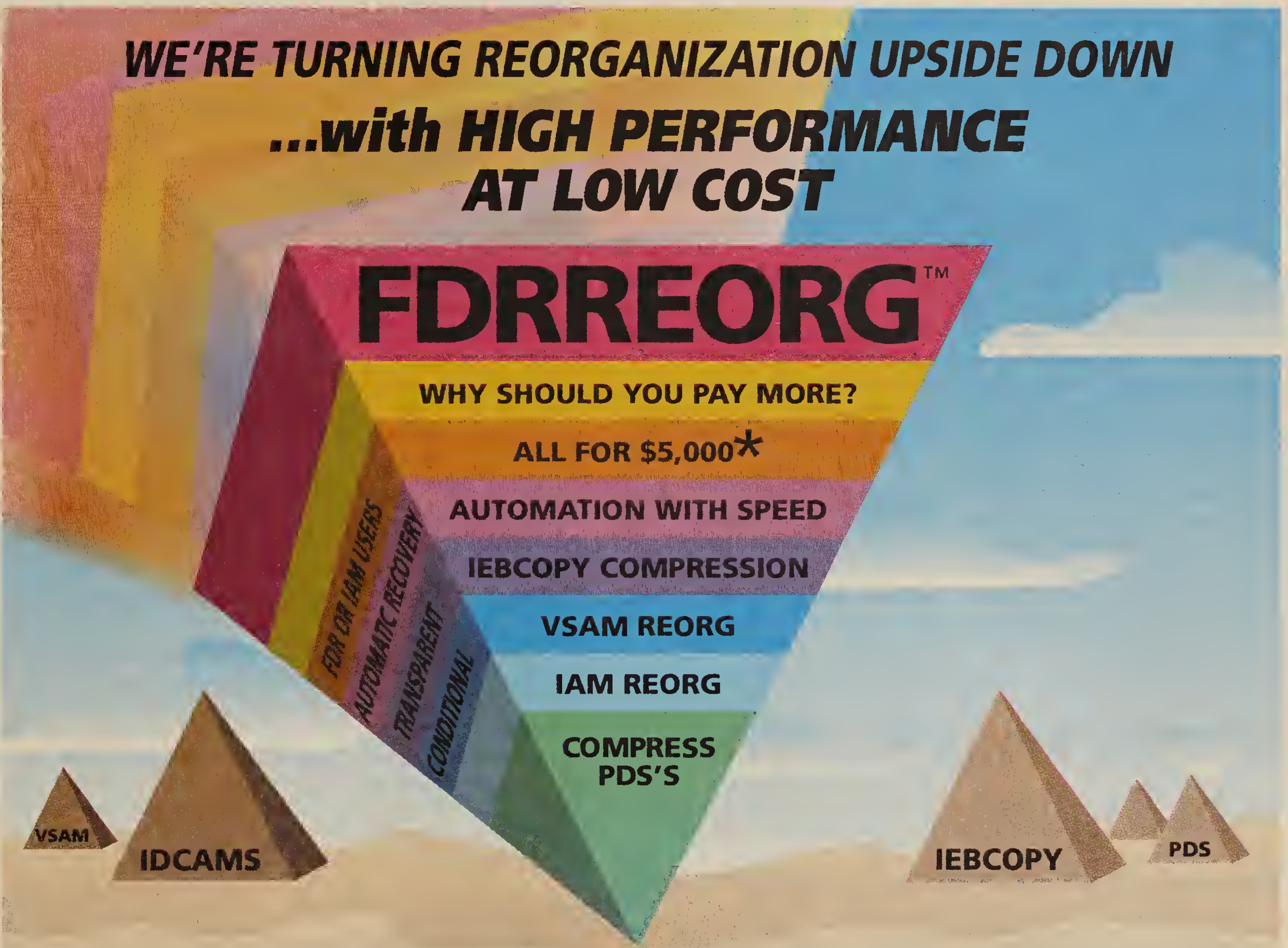
Print spooling and management: Siemens/Nixdorf Information Systems, Inc.

Storage device management: Pyramid Technology Corp.

User and group management: Pyramid Technology

Backup/restore: No partner yet

- Source code available to USL licensees next fall, with end-user products expected by the end of 1993.
- Pricing expected at about $30,000 for midrange systems.



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INNOVATION 20 YEARS DATA PROCESSING FDR IAM 1972 1992

IS ponders fit for workgroup Windows

CONTINUED FROM PAGE 1

expects a typical evaluation process to last six to nine months. "It is a new concept," Siegelman added. "It doesn't easily fit into a category like other products."

Microsoft appears to be taking a two-pronged approach to marketing the product, both as an entry-level network environment for small businesses and as an easy way for larger companies to attach Windows workstations to existing networks. Customers with such networks would also gain the benefit of features such as Network Dynamic Data Exchange, according to Microsoft.

> "THE OBVIOUS MARKET is the people who aren't networked. I'm thinking of using it at home. Small groups that haven't really been touched by LANs and WANs will eat this stuff up."
>
> JUDE GARTLAND
> LEHMAN BROTHERS

At first glance, Windows for Workgroups — with its basic peer-to-peer networking functions, low upgrade prices and the everything-in-one-box packaging — seems targeted primarily at small groups or individuals. The starter kit includes 25 feet of cable to create a Windows for Workgroups network.

Ann Palermo, director of workgroup and messaging systems research at International Data Corp., said that while Microsoft is aggressively pursuing corporate business, Windows for Workgroups seems more "a good product for a small office."

"If you have an electronic-mail system installed, or you're networked already or your workgroup is beyond a handful of people, and you have multiple LANs and sites, the Windows for Workgroups alone is not for you," Palermo said.

"Would a Novell user dump their LAN? No," Palermo added. "Would a CC:Mail user dump their E-Mail? No. It is an option for mail and networking in some situations, particularly small workgroups."

Some IS executives said they already have a number of the functions that Windows for Workgroups offers. The software, based on Microsoft's Windows 3.1, provides basic peer-to-peer networking functions, Microsoft Mail and several workgroup functions, such as calendaring and scheduling, in one package.

"The obvious market is the people who aren't networked," said Jude Gartland, a senior vice president at Lehman Brothers in New York. "I'm thinking of using it at home. Small groups that haven't really been touched by LANs and WANs will eat this stuff up."

However, Gartland said he wonders if Windows for Workgroups "is different enough to bring in" at Lehman Brothers, which already runs Novell, Inc. local-area networks. In addition, "we already have a mail system, common drives and common areas to put things out to people," he said.

Jim Lisiak, a systems analyst at Chevron, Inc., said he believes Windows for Workgroups could likely first pop up in smaller offices at companies that do not want to invest in a server or network administrator but do want the peer-to-peer functions. Eventually, it may become more widely used.

"I think this is going to be a grass-roots thing," Lisiak said.

Product lowdown

Windows for Workgroups, basic stats:

- Preinstalled on 40 hardware manufacturers' systems, including Compaq Computer Corp., Hewlett-Packard Co., Gateway 2000, Inc. and Zenith Data Systems. Microsoft estimates 1 million copies will be shipped with desktop and laptop systems within the year.
- Many software providers also plan support, including Wordperfect Corp., Beyond, Inc. and Dun & Bradstreet Software.
- Several pricing schemes, including a starter kit containing all hardware and software for two PCs for a list price of $849.95. Windows for Workgroups software alone lists for $249.95. Windows 3.1 users can upgrade for $99.95, and Windows 3.0 users can upgrade for $149.95. In addition, Microsoft announced the availability of the Workgroup Connection for MS-DOS, which allows DOS users to access Windows for Workgroups machines, without file sharing, and send and receive E-mail. It has a list price of $79.95

IBM mulls an OS/2 for workgroups

BY ROSEMARY CAFASSO
CW STAFF

As Microsoft Corp. ships initial copies of Windows for Workgroups, IBM said it is evaluating the possibility of releasing a similar product based on OS/2 2.0 sometime next year.

IBM also said it is unsure whether it will support Windows for Workgroups as it now supports Microsoft's Windows operating platform under OS/2 2.0.

A workgroup version of OS/2 may include an integrated version of Lotus Development Corp.'s CC:Mail as well as other workgroup utilities, such as calendaring, said Joseph Damassa, manager of IBM local-area network systems marketing.

Several OS/2 users contacted last week said they would not want to see workgroup functions built into the basic OS/2. Instead, they would like to see an optional OS/2 with workgroup features.

"I don't care for a bundled operating system," said Joseph Herrin, director of systems development at Joseph E. Seagrams & Sons, Inc. in New York. "If I wanted that, I'd get an AS/400. I prefer a more open approach that lets you mix and match components."

IBM claims to now have the components necessary to provide OS/2 for workgroups. The company resells Lotus' CC:Mail and Notes.

"What we are working through now is how we package it," Demassa said. "The decisions are being made, and we'd like to have them surface as products next year."

One lingering question is peer-to-peer networking, Demassa said. While some customers have expressed interest in including peer-to-peer networking capabilities in OS/2, it is "not a common request."

Microsoft eyes Wall Street with Windows applications

Conference on financial tools draws 650 execs

BY CHRISTOPHER LINDQUIST
CW STAFF

NEW YORK — Microsoft Corp.'s Windows on Wall Street conference last week was the latest example of its increasing desire to be taken seriously by vertical corporate markets. And while the attendees may not have seen anything particularly new, they did have a chance to meet other financial professionals and discuss the prospects of Microsoft's making significant headway in this important market.

"There was a lot of hallway conversation going on," said Michael Packer, managing director of technology and planning at Bankers Trust Co. He gave a presentation on "Rightsizing on Wall Street."

The conference was perhaps more interesting in terms of what it said about Microsoft's desire to move into vertical markets than for its content, Packer noted.

Whether Microsoft's struggle to gain credibility in such markets is succeeding is still an open question, but the company's sheer pervasiveness in the PC software market across all segments forces customers to keep at least one eye on the Redmond, Wash.-based company.

Force to reckon with

"I don't think anybody who wants to work in the computer industry on this planet can't take Microsoft seriously," said David Readerman, an analyst at Shearson Lehman Brothers, Inc. in San Francisco.

Readerman also noted that Windows and its applications are making a decisive move into the financial sector, further ensuring Microsoft's future importance. "For office applications, you have to work with Microsoft," he said.

According to Microsoft, more than 650 banking and financial executives, consultants and analysts attended the conference to see their peers give presentations of financial applications based on Windows.

Attendees also saw several independent software vendors and integrators demonstrate financial applications based on Microsoft platforms.

Financial apps

Representatives from several large financial organizations, including Barclays Network Services and Merrill Lynch Research, gave presentations of applications used in their companies, such as Merrill Lynch's Mutual Funds Analysis System, which is based on Microsoft's Excel.

Among the other announcements was one from Teknekron Software Systems, Inc. in Berkeley, Calif. The software subsidiary of systems integrator Teknekron Corp. unveiled plans to develop Windows and Windows New Technology-based financial applications in conjunction with Microsoft Consulting Services. Teknekron Software Systems' applications currently run under Unix.

Other products demonstrated included The Perfect Hedge by Glassco Park, Inc. in Surrey, British Columbia, and a set of branch banking applications created by York, Pa.-based Ampersand Corp.

CORRECTIONS

A photo in the Oct. 26 issue was not of Edward McCracken of Silicon Graphics, as was indicated.

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Contrary to information contained in a story in the Oct. 19 issue, Novell, Inc. officials said 1,000-user licenses and protected-memory application space will both be available in Novell's initial release of its upcoming NetWare 4.0 product.

…………

A reporting error in "KnowledgeWare to buy CASE consultancy" [Oct. 19] caused V. F. Corp. to be incorrectly identified. It is a Wyomissing, Pa.-based apparel maker.

…………

An editing error in "Quattro Pro for Windows boosts usability" [CW, Oct. 19] altered the meaning of a sentence. The sentence should have read ". . . while it is easier to use than Excel, it is questionable whether that is enough to make an experienced Excel user want to switch."

…………

A chart in the Oct. 12 issue showing the installed bases of various electronic-mail packages listed a package called "Right Hand Man." The package, from Futurus in Atlanta, has been renamed "Futurus Team."

…………

Because of an editing error, "Marching orders" [CW, Oct. 19] failed to credit the CW Database Division for conducting the survey.

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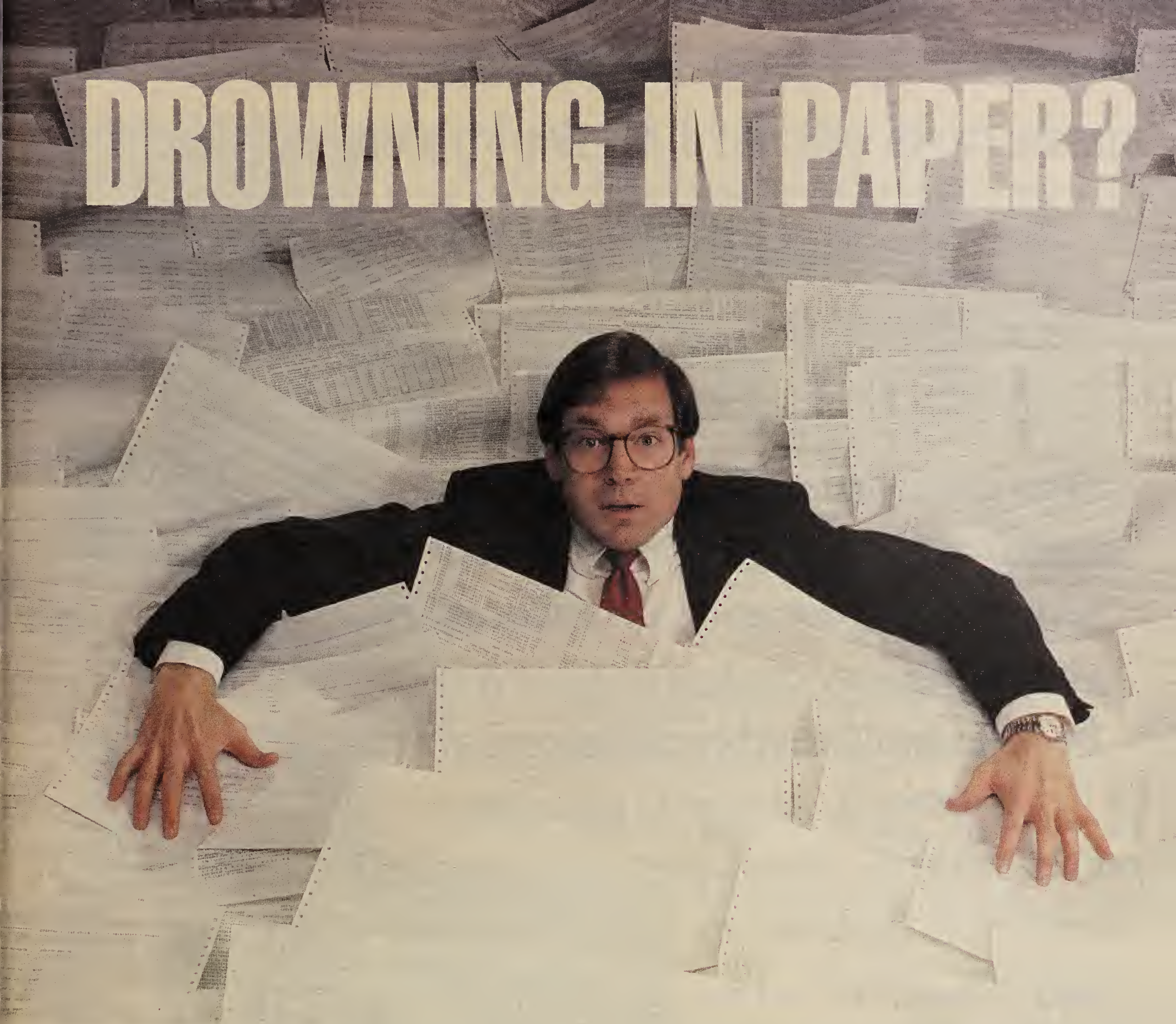
Because of a writer's error, an In Brief item in the Oct. 26 issue implied that application development tools makers Pure Software, Inc. and Mercury Interactive, Inc. plan to merge. In fact, they plan to merge their product lines early next year.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Canada casts vote for LAN deployment

Agency uses automated system to handle voter registration for recent national elections

BY LYNDA RADOSEVICH
CW STAFF

OTTAWA — An automated voter enumeration system received a thumbs-up from Canadian election officials, who put the system to the test while preparing for Canada's referendum vote last Monday.

Elections Canada, the agency in charge of running Canadian elections, deployed local-area networks in each of the 295 electoral districts to help the district officers automate the production of voter lists. The system was not used to poll the voters on election day. That process still involved paper ballots and wooden boxes. But the system did speed up the creation of lists of eligible voters.

In prior elections, the officers hired people to go door to door, writing down the names and addresses of eligible voters and typing the lists at night on typewriters. The officers made photocopies of the lists for candidates, Elections Canada and record files. By law, fresh lists had to be prepared before each election.

The automated approach made the process easier to control, said Frank Ching, a returning officer based in Brampton, Ontario.

"For one thing, I could track the information coming in. If a pair of enumerators weren't doing their jobs, I knew it. Previously, I didn't know" what they were doing until the typed lists came in, he said. Other advantages include having all the voter data available for analysis, he said.

The problem with using networked computers was that no one knew when the next election would be called or where the local district leaders would establish headquarters. In Canada, elections are not held at regular intervals. The Parliament of Canada can call for elections at any time during its five-year term.

Elections Canada needed mobile LAN systems that, like military units, could be set up to attack whenever Canada's Parliament called an election.

"A lot of people asked, 'Why didn't you do this sooner?' " said Harry Neufeld, director of information technology at Elections Canada. "But there is tremendous risk in dropping technology into offices that aren't there until elections are called."

A vote for SHL

Elections Canada chose network integration giant SHL Systemhouse, Inc. in Ottawa to coordinate the $15 million project in June. By August, SHL Systemhouse had 2,791 PCs, 614 printers, 306 preconfigured LANs and 10 disaster recovery LANs packaged and waiting in warehouses.

In addition, 4,000 systems administrators, data entry clerks and other personnel were ready to set up shop across Canada within seven days of a call for an election.

> ELECTIONS CANADA needed mobile LAN systems that, like military units, could be set up to attack whenever Canada's Parliament called an election. In Canada, elections are not held at regular intervals.

"This system will save the taxpayers $10 million," Neufeld said. Most of the savings will happen next time an election is called because rather than starting from scratch, enumerators can simply update existing lists.

The system was not flawless. Neufeld said there were "hundreds" of problems with uninterruptible power supplies, hard disk failures and, in one case, a machine literally going up in smoke. But "we foresaw most of the problems," he said, "and Systemhouse had the resources in place to handle them."

Democracy in motion

When the call for elections went out in early September, Elections Canada swung the system into place.

First, on-call administrators in each district set up the LANs, and the return officers approved them in seven days. Then the return officers in each of the 295 districts hired enumerators to survey all the adults in their district and prepared a voter list within 36 days.

Data entry clerks stationed at the networked PCs in the district office keyed the handwritten survey information into a customized database program called ECAPLE, or Elections Canada Automated Production of Lists of Electors, which was developed by ISM Information Systems Management Corp. in Regina, Saskatchewan, using Computer Associates International, Inc.'s CA-Clipper. The LANs ran Artisoft, Inc.'s LANtastic network operating system.

After the elections, the entire system will be back in boxes in 22 warehouses, waiting for the next Canadian election.

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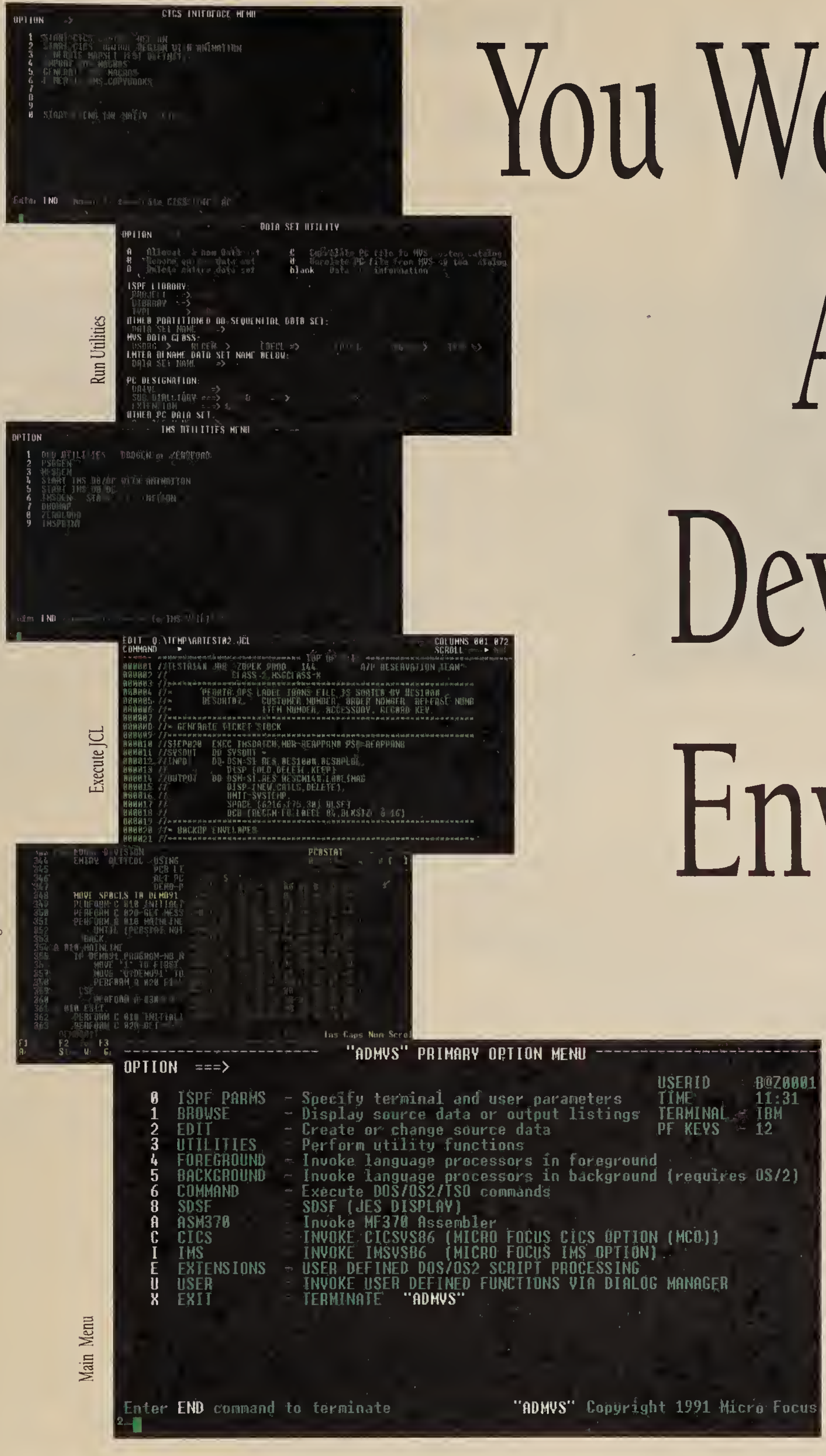

```
------------------------   "ADMVS" PRIMARY OPTION MENU ---------------------------
OPTION  ===>
                                                                  USERID     0@Z0001
   0  ISPF PARMS   - Specify terminal and user parameters     TIME       11:31
   1  BROWSE       - Display source data or output listings   TERMINAL - IBM
   2  EDIT         - Create or change source data             PF KEYS  - 12
   3  UTILITIES    - Perform utility functions
   4  FOREGROUND   - Invoke language processors in foreground
   5  BACKGROUND   - Invoke language processors in background (requires OS/2)
   6  COMMAND      - Execute DOS/OS2/TSO commands
   8  SDSF         - SDSF (JES DISPLAY)
   A  ASM370       - Invoke MF370 Assembler
   C  CICS         - INVOKE CICSVS86 (MICRO FOCUS CICS OPTION (MCO))
   I  IMS          - INVOKE IMSVS86  (MICRO FOCUS IMS OPTION)
   E  EXTENSIONS   - USER DEFINED DOS/OS2 SCRIPT PROCESSING
   U  USER         - INVOKE USER DEFINED FUNCTIONS VIA DIALOG MANAGER
   X  EXIT         - TERMINATE  "ADMVS"



Enter END command to terminate                 "ADMVS" Copyright 1991 Micro Focus
2_
```

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System crash

Stella Johnson

A mainframe basher *exercises his frustration with big iron at a demolition derby sponsored by the Boston Computer Society (BCS) in Cambridge, Mass., last week. Participants paid $5 for five minutes of beating up old computers that were not fit for the landfill. Proceeds went to a BCS committee that serves nonprofit organizations.*

Legent increases options, flexibility in desktop line

Pacts with independents boost interoperability

BY GARY H. ANTHES
CW STAFF

VIENNA, Va. — Legent Corp. last week announced agreements with two independent software vendors that will enable it to build flexibility and user choices into its family of desktop products.

Legent will use the Galaxy Application Environment from Visix Software, Inc. in Reston, Va., to develop distributed systems management products with multiple graphical user interface (GUI) options. A Legent product with the Galaxy capability embedded would allow users of workstations and PCs to set a runtime option to select a "look and feel" standard such as Open Look, the Open Software Foundation's Motif, Microsoft Corp.'s Windows or OS/2 Presentation Manager GUI.

"This allows us to develop the application once for a platform and give the user a choice of the look and feel he would like on that platform," said Murray Berkowitz, director of enabling technology at Legent.

Legent will also incorporate Pipes Platform from PeerLogic, Inc. in San Francisco in its products to give users greater interoperability in heterogeneous environments. Pipes is a communications tool that can span dissimilar operating systems, processors and network protocols.

As with the Galaxy implementation, Legent products incorporating Pipes will use a standard application programming interface across all platforms. Combined with a built-in "naming service," Pipes-fitted applications will be able to transparently find and access diverse servers in the network, whether they run under MVS, OS/2, Unix, DOS/Windows or Novell, Inc.'s NetWare, Legent said.

> "THE OPEN systems planning arena is one where users are crying for planning directions and products. These things let Legent write and maintain one set of code and then say, 'Let many blossoms bloom.'"
>
> PETER KASTNER
> ABERDEEN GROUP

Pipes also provides a "context bridge" that will enable Legent products to employ protocol-independent messaging so users can transparently access internetworks employing diverse protocols such as Transmission Control Protocol/Internet Protocol, NetBIOS and Systems Network Architecture/LU 6.2. "It will give end users a broader reach in terms of what they can bring to the desktop," Berkowitz said.

Legent did not say which products will first have the capabilities enabled by Galaxy and Pipes, but he said development work is under way in products for software management, data center management, production control and resource management.

Blind faith

David Gruzeski, senior systems programmer at General American Life Insurance Co. in St. Louis, where a number of mainframe Legent products are used, said he welcomes Legent's move to distributed computing but knows little of the details. "I have justified a PC on my desk because I know these things are coming from them, and we want to be positioned for that," he said.

"The open systems planning arena is one where users are crying for planning directions and products," said Peter Kastner, a vice president at Aberdeen Group in Boston. "These things let Legent write and maintain one set of code and then say, 'Let many blossoms bloom.'"

"Legent is actually making it possible to restrict the number of options users have to consider. It gives them the certainty that they are not going to have to face complex choices," said Peter Burris, director of commercial systems research at International Data Corp. in Framingham, Mass.

Toshiba turns up heat in 486 market

New notebooks, pen system highlight activity

BY MICHAEL FITZGERALD
CW STAFF

IRVINE, Calif. — Toshiba America Information Systems, Inc. today will battle back against competition in the notebook market by releasing two new multifeatured 486 notebooks and announcing its first pen system for the U.S. market. Toshiba also cut prices 15% to 25% across much of its product line.

The pen-interface system, the Dynapad T100X, a 3.3-pound, notebook-size system, will be available in January. New monochrome and color notebooks are available now.

Toshiba has seen its notebook market share figures fall from 19.4% in 1990 to a projected 13.6% this year, according to BIS Strategic Decisions, a market research firm in Norwood, Mass. Apple Computer, Inc. surpassed Toshiba, becoming No. 1 in notebook sales, thanks to its hot-selling PowerBooks, and Compaq Computer Corp. is threatening to make it No. 3, according to BIS.

Bounce potential

Toshiba is not slipping quietly and may bounce back strongly because of its push into the 486 notebook market, analysts said.

"I'm impressed by the new products," said Chris Vasko, an analyst at BIS. "They're already the leader in the 486 market, and they've done a lot of work on its display and made it lighter, which is the key success factor."

"People are looking for the next level of performance out of the notebook; they're ready for the 486," said Janet Cole, an analyst at Dataquest, Inc. in San Jose, Calif.

Cole said applications for Microsoft Corp.'s Windows environment were driving the market toward the 486.

Marshall Fernholz, network control manager at the American Medical Association (AMA) in Chicago, said his company uses Toshiba notebooks and that the new products "look like great stuff, but it's hard to justify the price" for the color screens. Even so, Fernholz said, the AMA will probably soon buy at least a couple of color notebooks.

Features galore

The new T4500 steps beyond the existing T4400 line by being more than a pound lighter and offering up to an extra hour of battery life, thanks to a low-volt Intel Corp. processor.

The T4500 series also features a display that gives more information about the state of various system components, such as the battery.

The existing T4400C features faster 486SX and 486DX chips and is expected to offer a 200M-byte hard drive in December. It also has a larger screen — 9½ in., compared with 8½ in. for the T4500C.

The 3.3-pound Dynapad is based on a low-volt chip from Advanced Micro Devices, Inc.

"It's a nice system, has a good feel and [Personal Computer Memory Card International Association] cards, and at that low weight, it's much more the kind of thing people are going to need in the field than something like the ThinkPad," an IBM product that weighs more than 7 pounds, Cole said.

What should help is a street price near $3,000, which is low in the current pen hardware market. The system's light weight in a full-size notebook is also distinctive.

Getting serious

Toshiba's new notebook line includes its first pen-based system marketed in the U.S.

	Dynapad T100X (pen-based)	T4500 (notebook)	T4500C (color notebook)
Weight	3.3 pounds	6.4 pounds	6.6 pounds
CPU	AMD 25-MHz 386SXLV (3.3V)	Intel 20-MHz 486SX (3.3V)	Intel 20-MHz 486SX (3.3V)
Size	10.6- by 8.3- by 1.6 in.	11.7- by 8.3- by 1.8 in.	11.7- by 8.3- by 2 in.
Slots	2 PCMCIA slots	PCMCIA slot	PCMCIA slot
Storage/ memory	40M-byte hard drive 4M bytes RAM	80M- or 120M-byte hard drive 4M bytes RAM	80M- or 120M-byte hard drive 4M bytes RAM
Power	2-3 hour battery life	3-4 hour battery life	3-4 hour battery life
Availability	January 1993	Now	Now
Price	$3,499	$2,799 (80M-byte drive) $2,999 (120M-byte drive)	$4,399 (120M-byte drive)

CW Chart: Michael Siggins

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Concerns go beyond E-mail API

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — Many users taken aback by the mudslinging keynote speech that Lotus Development Corp. President Jim Manzi delivered at the Electronic Mail Association's (EMA) annual conference last week said more imminent messaging challenges are on their minds than the long-controversial mail-interface issue Manzi grudgingly tried to resolve.

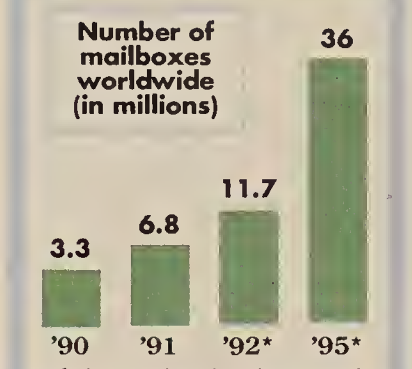
Somewhere amid his rankling of competitor Microsoft Corp., Manzi managed to break down a major barrier to the proliferation of mail-enabled applications by announcing a partial truce in the long-standing mail interface dispute (see story at right). The move should help fuel the development of mail-enabled applications.

But users and developers cited issues such as mail-engine interconnectivity, public electronic-mail network interoperability, messaging-oriented business reorganization hurdles and the need for global mail directories as concerns they want to resolve before they embark on groupware development.

"Common APIs are necessary for groupware but worrying about them now is putting the cart before the horse," said the E-mail administrator of a large networking company who asked not to be identified. "We first need to get our different mail platforms to talk to each other without the loss of functionality that happens when you communicate through a gateway."

Delivering the mail

The LAN-based E-mail market is expected to grow dramatically over the next several years



Includes LAN-based workgroup and E-mail software products (not service)

*Projected

Source: International Data Corp.

Forrest Conrad, manager of system programming at Teradyne, Inc. in Boston, agreed. "Getting E-mail platforms to talk to each other is the biggest issue, particularly from an administrative point of view. Once a message leaves our [Digital Equipment Corp.] All-In-1 mail system for another system, I have no way to track that message," he said.

Mail application programming interfaces (API) will eventually figure into the equation, observed Joseph Caruso, director of corporate systems and technology at American Express Co. in New York. "But we need to knock down organizational barriers in enterprise business process re-engineering first," he said.

Caruso, who is involved with in-house development, acknowledged that common mail interfaces under development by an industry group as well as the move to integrate Microsoft's and Lotus' competing mail APIs "at least give us a place to start" with groupware.

Global firms wishing to electronically communicate with outside business partners face an interoperability problem among value-added network (VAN) providers, according to Donald M. Gilbert, director of information systems at the American Petroleum Institute. "At this point, you simply can't send a message overseas to a VAN that isn't yours."

Gilbert said he understands this is because of a lack of contractual arrangements among the network providers.

Consistent, enterprisewide directory services continued to be a frequent topic of discussion at EMA. Some companies, such as New York-based global advertising agency Young & Rubicam, Inc., are leveraging Lotus's Notes database-oriented groupware platform to build their own.

Senior editor Elisabeth Horwitt contributed to this report.

Manzi miffs Microsoft with VIM, MAPI plans

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — In a scathing keynote address at last week's Electronic Mail Association's annual conference, Lotus Development Corp. President Jim Manzi trounced competitor Microsoft Corp., saying it embodies the reasons users are frustrated over the plentiful lip service being paid to "openness."

In using the dais to denigrate Microsoft's efforts with competing groupware standards and products, Manzi demonstrated that vendor politics are continuing to stall user progress toward harmonious networking.

Manzi's tone succeeded in burying the good news he had to deliver: that Lotus will tweak its messaging interface specification for mail-enabled applications, also backed by six other large industry players, to work with a competing interface from Microsoft [CW, Oct. 26].

The announcement followed Manzi's descriptions of Microsoft's new Windows for Workgroups and its Windows-oriented application programming interface (API) as "proprietary" and "a Trojan horse that will cause confusion and prevent users from committing to other products and operating systems."

Lotus embraced Microsoft's specification by allowing applications written to the Lotus-backed Vendor-Independent Messaging (VIM) interface to work with Microsoft's Messaging Application Programming Interface (MAPI) applications.

Users and developers have encouraged such API blending to fuel mail-enabled application availability. The combined APIs will offer richer functionality than those that will come out of the Common Mail Call set under construction by the X.400 Application Programming Interface Association (XAPIA), analysts said.

John Owens

Jim Manzi *called Windows for Workgroups 'a Trojan horse that will cause confusion'*

"Since Microsoft hasn't written VIM interfaces for MAPI, we're going to do it for them, free of charge to everyone," Manzi said.

"Manzi's presentation made it unclear whether the VIM companies will support the common calls from the XAPIA," said Joseph Caruso, director of corporate systems and technology at American Express Co. in New York. Manzi "seemed to just create more confusion" over the whole API issue, he said.

Similarly, Robert Forhertz, an electronic-mail project engineer at Monsanto Co. in St. Louis, said, "What we thought was coming together is falling apart. We wanted Lotus and Microsoft to work together [for one API]. With what Lotus is proposing, you'd have APIs calling APIs; we want one set of calls."

Daniel Petre, vice president of Microsoft's Workgroup Division, said, "[Manzi] does not understand the concept of extending the operating system to provide workgroup capabilities to a wide range of users."

Dave Whitten, an analyst at Gartner Group, Inc., a consultancy in Stamford, Conn., added: "Bottom line, Manzi said that we've come to a conclusion on the API and we're not going to be rolled over by Microsoft."

IBM users show preference for pure TCP/IP over APPN

BY ELISABETH HORWITT
CW STAFF

SAN FRANCISCO — Strenuously denying that it is responding to the threat of the Advanced Peer-to-Peer Interconnect (APPI) Forum and its SNA-over-TCP/IP scenario, IBM made some major concessions last week toward a more open, affordable and TCP/IP-supportive version of its Advanced Peer-to-Peer Networking (APPN) protocol.

Even so, IBM's peer-to-peer version of Systems Network Architecure (SNA) seemed to be losing rather than gaining ground, with users and vendors at last week's Interop '92 show demonstrating a marked preference for pure Transmission Control Protocol/Internet Protocol (TCP/IP).

There was also a strong interest in APPI, the budding de facto standard proposed by Cisco Systems, Inc. as a way to let IBM SNA and APPN devices communicate over a TCP/IP backbone.

While IBM is positioning APPN as a migration path to peer-to-peer environments for SNA users, it also sees the protocol as a de facto standard for high-speed, multiprotocol, local-area network-to-LAN connections, IBM spokesmen said.

"We are demonstrating APPN over TCP/IP on the floor now and will ship it shortly, so why do you need APPI?" asked IBM general manager Ellen Hancock.

Releasing all specs

Addressing recent allegations that it would keep control of APPN Network Node and charge hundreds of thousands of dollars for the use of APPN Network Node source code, IBM announced that it would publish all specifications needed to build APPN Network Node in the next few months, at a nominal cost.

In addition, IBM said it would publish the management information base for managing APPN resources via Simple Network Management Protocol.

However, companies that built APPN-based products would still have to pay patent fees priced in the tens of thousands of dollars, said Rick McGee, director of architecture and telecommunications at IBM.

IBM will sell a fully tested set of core APPN code for $400,000.

Rather than lose major customers to TCP/IP, IBM has begun to work aggressively with customers to integrate their TCP/IP and SNA networks.

For example, IBM is working with Boeing Computer Services to implement SNA applications on a TCP/IP network, Hancock said. A Boeing spokesman confirmed that the project was under way.

A later release of APPN, APPN+, will be optimized to make use of the 1M- to 45M-byte bandwidth of frame relay, while a later version will converge with the Asynchronous Transfer Mode standard, according to McGee.

Working out details

Last week Cisco handed over responsibility for the standard to the APPI Forum, which met last week to set up a game plan for delivering a working APPI protocol by mid-1993.

While Cisco has proposed the initial APPI protocol, the final version will incorporate the best of all members' suggestions, a Cisco spokesman said.

Wells Fargo Bank's Wholesale Services is using both TCP/IP and LU6.2, according to Roy Camblin, a senior vice president. But "my personal choice is TCP/IP," Camblin said.

One comany already committed to APPI is Chevron Corp. Nancy Mason Vandell, a senior communications analyst for technical services, said at the forum meeting that she is leading her firm to implement APPI across all of its Cisco routers.

Uphill fight

IBM must work hard to convince IS managers that its APPN protocol is worth implementing in heterogeneous environments

200 IBM mainframe sites in the U.S. were asked which of the following statements best described their attitude toward APPN:

- **Important because it meets all networking needs — 7.5%**
- **Just for IBM networks — 8%**
- **Interested, but not sure — 37.5%**
- **Not interested — 20%**
- **Happy with SNA — 27%**

Source: International Data Corp.

Standards fights vex users

CONTINUED FROM PAGE 1

Group, a consulting firm in Salt Lake City.

Meanwhile, users "don't want to hear APPN vs. TCP/IP vs. IPX;" they just want their applications to communicate transparently, Burton said.

Users echoed that sentiment. Monsanto Co. in St. Louis, for example, is struggling to interconnect a broad range of workgroup-enabled applications in the absence of a truly standard electronic-mail application programming interface (API) with broad vendor support, said Robert Forhetz, project manager for E-mail.

Vendor behavior at last week's show was not calculated to raise user hopes of future harmony and interoperability. Among the more notable fracases were the following:

- Lotus Development Corp. Chief Executive Officer Jim Manzi, while bad-mouthing rival Microsoft Corp., announced that Lotus would translate both its own E-mail API and that of Microsoft (see story page 14).
- IBM and the Advanced Peer-to-Peer Internetworking Forum, while taking potshots at each other's efforts, both promised to let users mix and match IBM's Systems Network Architecture and Transmission Control Protocol/Internet Protocol.
- MCI Communications Corp. announced the first long-distance Switched Multimegabit Data Service product and criticized AT&T and Sprint Corp. for refusing to "give users a choice" (see story page 16).

The spectacle of vendors criticizing one another in the name of standards sickened information systems and network managers, who had come to the conferences looking for help in their struggles to integrate multivendor computing and networking environments.

"It was like a barroom brawl," according to one attendee of the Lotus/Microsoft fracas.

Senior editor Joanie M. Wexler contributed to this piece.

User quest

Interop attendees searched the conference floors for two types of solutions to their multivendor networking problems. One group sought broad vendor support for one common networking standard; the other wanted products that provide application and systems interoperability across a broad range of protocols.

Roy Camblin, a senior vice president at Wells Fargo Bank's Wholesale Services business, is in the latter group. "We have a combination of TCP/IP and [IBM] LU6.2, and I tell a group when they ask for an either/or decision, 'You'd better support both.' " Not counting on IBM's "many promises" in terms of a peer-to-peer, standardized version of SNA, "I'm seeing standards more as a list of options," Camblin added.

Boeing Computer Services currently supports seven networking protocols and is "urging users to go to TCP/IP," said Darwin Perkins, a network manager at the company. A "major driver" for this move: Boeing is going to a centralized network management system and has found nothing that can handle a broad range of network protocols, Perkins said.

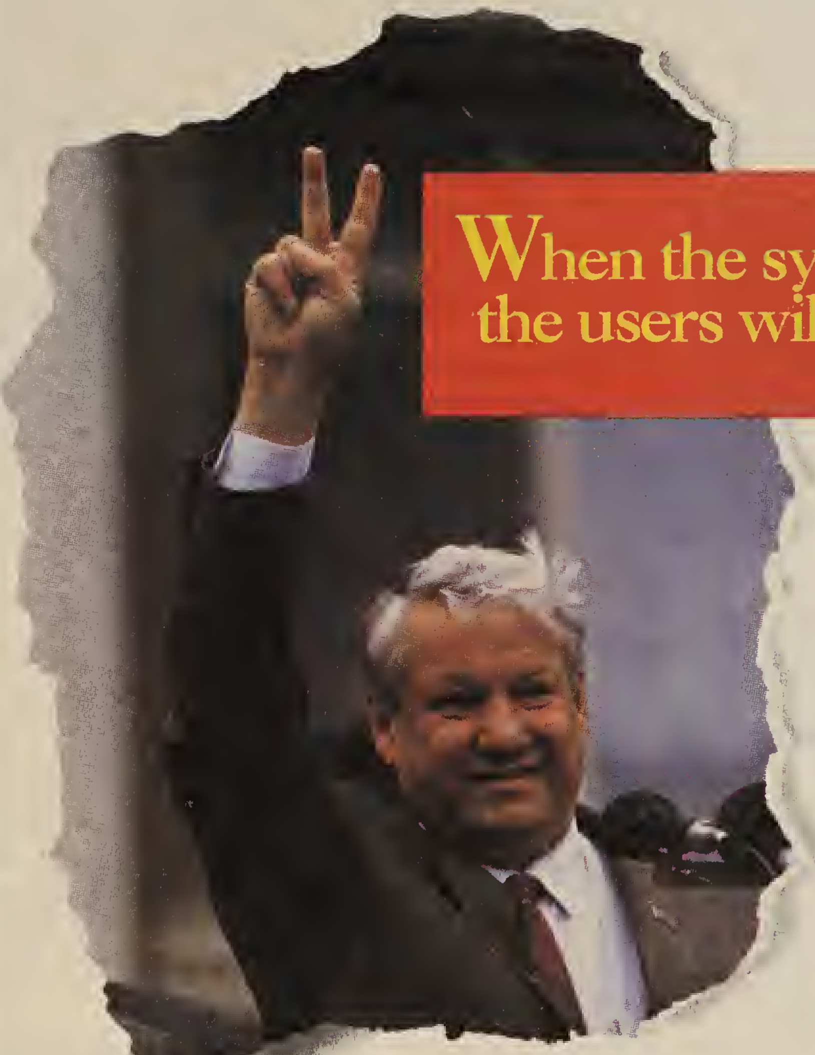
Great West-Life Assurance Co. in Manitoba, Canada, is one of many companies using multiprotocol routers to handle a broad mix of TCP/IP, Novell, Inc. IPX and SNA, according to Nick Van Der Zweep, an assistant technical support manager.

However, the company is still working out some glitches in Cisco Systems, Inc.'s IBM Synchronous Data Link Control implementation on its router, according to Van Der Zweep.

Another area of user disappointment has been with the most promising of the stagnating Open Systems Interconnect protocols, X.400 and X.500, for E-mail and corresponding directory services. Gordon Craig, vice president of the Houston NetWare Users Group and LAN administrator at the Texas Rehabilitation Commission in Austin, Texas, explained, "Novell said it has no intention of supporting X.500 because it is too slow."

Without that option from Novell, he said, he is weighing Banyan Systems, Inc.'s StreetTalk directory service for NetWare, which was recently announced, against waiting for NetWare Version 4.0, slated to ship early next year.

One area in which cooperation seemed to be budding was network management. DHL Worldwide Express communications architect John Payne said that increasingly, standards-based application interfaces of IBM's NetView/6000 and Hewlett-Packard Co.'s OpenView will let DHL implement the network and Unix systems management applications on either platform, depending on user preference.



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NEWS SHORTS

HP replaces best-selling printer

Hewlett-Packard Co. replaced its market-leading LaserJet III printer with the LaserJet 4 and LaserJet 4M, 600 dot/in. printers, priced at $2,199 and $2,999, respectively. The new 8 page/min. printers can work six times faster than the LaserJet III. They can also handle up to 850 pages of paper. The redesigned printers are smaller and lighter than the LaserJet III. HP also cut prices on older LaserJet models.

Piracy takes a dive

The Software Publishers Association (SPA) reported a huge decrease in software piracy last year but also noted that the industry still lost more than $1 billion to stolen software and illegal copying. The SPA said the drop — a 41% decrease from 1990, to $1.2 billion — resulted because of changing market trends, industry enforcement and education. Nonetheless, the SPA also said that today, one in five PC software programs is an illegal copy.

Low-volume discounts from Lotus

Lotus Development Corp. expanded its licensing options last week to include more discounts for low-volume purchases. A License Pack program is targeted at current users and will give them a discount of up to 20% when they license more copies of the currently installed software. A Reseller Sales Volume Purchase Plan provides discounts of 20% and higher when a customer purchases a minimum of 50 copies of a Lotus application. Previously, these discounts were provided to users who bought "in the thousands," a company spokesman said. The spokesman said the industry will "probably see more" discount programs coming from Lotus.

Quattro users unite

A Quattro Pro users' group was launched in Southern California last week, and it claims it is the first major group in the U.S. focused on providing support and information on the Borland International, Inc. spreadsheet. The group's acting president is Wolf Kadavanich at Motek Information Systems. The kickoff meeting with be held Friday in San Diego.

Microsoft, Borland recast tools

Microsoft Corp. has been demonstrating Visual Basic 2.0 in preparation for its release early this month. The updated development tool reportedly produces code that averages 35% faster execution speeds than Version 1.0 and creates 30% smaller files for larger applications. Not to be outdone, Borland International has unveiled Borland Pascal with Objects 7.0 and Turbo Pascal 7.0, the latest versions of the company's popular Pascal development tool line.

Price signs OS/2 commitment

IBM last week officially announced its deal with Price Waterhouse that calls for it to act as the accounting firm's worldwide operating systems provider. The deal covers 35,000 PCs throughout Price Waterhouse and involves the purchase of more than 20,000 copies of OS/2 2.0. IBM will also provide Microsoft's MS-DOS and Windows to the company.

Short takes

Sequent Computer Systems, Inc. in Beaverton, Ore., is scheduled to announce today clustering capabilities for its Symmetry line of multiuser systems with support for the parallel server option in **Oracle Corp.**'s forthcoming Oracle 7.... **Mips Technologies, Inc.** today will unveil its newest reduced instruction set computing chip, the 64-bit, 150-MHz R4400 microprocessor.... Retail chain **Software Etc.** and information network **Prodigy** last week began offering free access to Prodigy's political databases to visitors at any one of Software Etc.'s 265 stores nationwide.... **Red Brick Systems, Inc.** in Los Gatos, Calif., unveiled its data warehouse software for HP's HP/Apollo 9000 Unix servers.... **NCR Corp.** has announced the release of StarPro Enterprise Messaging, an enterprisewide electronic-mail and messaging system. The system runs on a Unix platform and interconnects with other vendors' mail systems via the X.400 E-mail and X.500 directory standards, the company said.... Former **Timeplex, Inc.** President Dewaine L. Osman has returned to **Unisys Corp.** as vice president of corporate planning.

Wireless E-mail to span U.S.

RAM Mobile Data, Lotus show plan for hooks to packages such as CC:Mail

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — RAM Mobile Data last week filled in some details of its pioneering effort to bring electronic messaging to travelers who want to stay productive when a telephone jack does not happen to be handy.

The company announced that wireless commercial electronic mail services are now available on its nationwide packet radio network [CW, Oct. 26] and said it plans to provide the service to 90% of the U.S. urban population by June 1993.

RAM Mobile Data also announced a Premier Partners program with several vendors, including Lotus Development Corp., to develop wireless hooks to existing E-mail-based packages and services.

Two of the partners, Performance Systems International, Inc. (PSI) in Reston, Va., and RadioMail Corp. in Menlo Park, Calif., said their network access services are already available for hooking into the radio network. PSI's PCILink, which bridges users into networks such as the Internet, CompuServe, MCIMail, AppleLink, SprintMail and AT&T Mail, is available in 50 U.S. cities, the company said.

RadioMail's gateway service assigns users a radio mailbox and address; when mail arrives at the address, it is translated into such receiving formats as X.400, Internet, Lotus' CC:Mail and public mail systems.

Other Premier Partners in various stages of linkage development are AT&T EasyLink Services; Ericsson GE Mobile Communications, Inc., which makes the key radio modem component of wide-area wireless communications; Go Corp.; SimWare, Inc.; and WordPerfect Corp.

Digital Equipment Corp. and Hewlett-Packard Co. previously announced wireless messaging development efforts.

Most users said they are generally bullish on the idea that technology breakthroughs will make remote users more productive.

"I'm interested in anything that would grow and incent our population of telecommuters," said Peter Brown, director of technical services at Electronic Arts Canada, an entertainment products maker based in Burnaby, British Columbia. "The simple benefit is creating more available work time."

But, as with any new technology, availability of service is an issue for some users. For example, Gordon Craig, local-area network administrator at the Texas Rehabilitation Commission in Austin, a government entity with agencies throughout Texas, noted the general scarcity of communications services in Western Texas.

"If something can't cover the entire state, then it's not a solution for us. This makes nonwired solutions difficult." For example, he currently cannot get simple paging services from Austin to El Paso. "If I can't get paging, how can I expect messaging?" he asked.

Meanwhile, Lotus detailed some of its plans for bringing wireless communications to its mail-oriented products. Lotus' CC:Mail Remote, whose desktop version is installed on more than 2 million desktops today, will hook into the RAM Mobile Data network "sometime in 1993," said Glenn Kaufman, business development manager at Lotus' portable computing group. In addition, the company is "looking toward Notes for wireless links," he said.

Lotus will tweak CC:Mail for wireless users by equipping it with filtering capabilities. Such features, which exist today in sophisticated desktop mail packages such as Beyond, Inc.'s rules-based BeyondMail, would allow users with limited time and laptop memory to be selective about the volume of electronic information they download.

Kaufman also said Lotus will equip CC:Mail Remote with encryption as an added measure of security to that now embedded in the RAM Mobile network. He noted that the RAM Mobile partnership is likely to be the first of such efforts with other wireless network providers.

MCI breaks new ground with SMDS offering

BY ELISABETH HORWITT
CW STAFF

SAN FRANCISCO — MCI Communications Corp. last week announced what is said to be the first Switched Multimegabit Data Service (SMDS) offering from a long-distance carrier.

MCI's Virtual Private Data Service HyperStream reportedly supports SMDS' "connectionless" networking, which enables users to interconnect with those at other sites and companies on a casual basis, MCI spokesman Paul Weischelbaum said.

In contrast, frame-relay services require defining a permanent, point-to-point connection between communicating sites, according to Weischelbaum.

Compared with MCI's switched T1 and T3 services, which take three seconds to set up a call, HyperStream provides instantaneous on-demand call setup, Weischelbaum said.

MCI's announcement potentially expands SMDS from a regional offering limited to the territory of individual local-exchange carriers to a transnational networking service, MCI said.

Not in the cards

Sprint Corp. said it has no plans to offer SMDS but will provide gateways to interconnect users' SMDS equipment over its frame-relay and Asynchronous Transfer Mode services.

AT&T said it will provide a similar gateway if customer demand warrants.

Both carriers pointed out that SMDS is a U.S.-only standard, while frame relay is an international standard.

Scheduled for general release in mid-1993, HyperStream will support data rates of between 64K and 45M bit/sec.

Pricing will be on a usage-sensitive basis, with a price cap of 120% of a fixed-rate monthly price, MCI said.

Customers can send data over existing T1 lines without special equipment as long as they are transmitting at speeds less than 1.5M bit/sec., MCI said.

MCI can then allocate some of that T1 bandwidth to HyperStream and some to other types of service that are currently available.

Bandwidth on demand

The NASDAQ hopes to use HyperStream as a way to provide 56K bit/sec. bandwidth on demand to users throughout its network, the exchange said in a prepared statement.

The technologies will allow NASDAQ to add capacity automatically for "temporary use during peak periods," the exchange said.

NASDAQ plans to have contract negotiations and pilot testing of MCI's service completed by January, according to the exchange.

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Bank reworks outsourcing pact

CONTINUED FROM PAGE 1

management in an effort to right itself.

Fred Cisewski, the bank's MIS director and senior vice president, declined to reveal specific price cost values implemented in what he termed a "refinement" of the contract. Merrill Lynch & Co. analyst Steve McClellan has estimated the original deal at $120 million, and a source close to Bank South "characterized the cost savings as modest."

A spokeswoman at ISSC said she could not comment on the details of the contract.

What Cisewski did say was that the changes touched largely on "some of our pricing parameters." Those changes were necessitated by a number of factors, chief among them the following:

- The bank shrunk, but its processing needs increased.
- The Cost of living did not go up as much as anticipated.
- The bank is moving to a distributed processing architecture.
- Now that the bank is recovering, it has less ambitious growth plans.

The enormous transaction volume generated by loan analyses increased the bank's processing needs "more than if the bank had grown," Cisewski said. "When you have asset-quality problems, you have to do a lot of portfolio analysis that requires manipulating a lot of data."

What is not clear is whether this turn of processing events played in the bank's or IBM's favor. If the agreement was made less expensive, as the source indicated it was, the old formula most likely had worked for IBM.

Ladd Willis, executive vice president of First Manhattan Consulting Group, a New York-based bank consultancy, pointed out that bank outsourcing deals are typically priced by CPU use or a predetermined rate tied to certain activities, such as loan processing or direct deposits.

Contracts can get out of whack for the client or supplier if usage runs into areas not accounted for originally, or if the supplier's costs unexpectedly change from factors such as technology changes, he said.

"That's what happens in these bank outsourcing contracts — the charging algorithms might end up overcompensating or undercompensating the supplier," Willis observed. He said he "can only speculate" that it was this type of imbalance that threw the Bank South deal off kilter.

"There was an invalid assumption on both sides about what our proccessing requirements would be based on our business size," Cisewski said. "We tried to tie processing to the growth of the bank, but that was invalid."

If the bank had been paying on a CPU use basis, not only did it then end up paying for more processing than it had anticipated, but it was doing so from a weaker financial position.

Cisewski said IBM and Bank South have "changed some of the pricing parameters," including introducing measures that accommodate "some processing alternatives that didn't exist three years ago," such as factoring in more PC-oriented activity.

Those changes were not tied into transactions per se, he said, declining to elaborate on what they were tied into.

A distributed system under development at the bank will draw data from the mainframe and shuttle it via a Systems Network Architecture network through local-area networks and servers among employees who will be able to get more timely information on client activity, Cisewski said.

The restructured deal also gives Bank South back some money that it had paid because of overestimates of how high the cost of living would rise. It is common in outsourcing deals for the vendor to tie its cost/price formula into its projections for the consumer price index.

One source said Bank South had earlier this year explored a radically different set of options that would have broadened the scope of IBM's responsibilities by giving the computer giant control of PC maintenance, training and purchases. A Bank South policy committee of the bank's five top executives decided against those measures in August because the new management team, led by Chairman Robert Guyton, wanted to focus on developing a strategic plan for the bank's core business, the source said.

Cisewski said the change disproves a theory promulgated by outsourcing doomsayers that long-term deals lock a customer into rigid parameters. The original contract contained provisions for changes, he said.

Customer sues IBM for support lapse

BY JOHANNA AMBROSIO
CW STAFF

ATLANTA — Just as IBM is attempting to make its mark as a premier services organization, a customer has filed a $150 million lawsuit alleging that IBM did not provide adequate staffing to finish a project on schedule.

The customer, First Financial Management Corp. (FFMC) in Atlanta, provides data processing and other services to some 800 small and midsized banks through a subsidiary called Basis Information Technologies, Inc.

The lawsuit, filed in U.S. District Court on Oct. 5, alleged that FFMC and IBM contracted in December 1989 to jointly build a banking software system that would be rolled out to FFMC's 800 customers. IBM "has failed to deliver" the new system, court documents said.

An IBM spokesman declined to comment on the matter.

Donald Sharp, an FFMC senior vice president, said, "IBM has not fully conformed to the original agreement. But we're not interested in the money. We're just trying to get the project completed."

According to the FFMC complaint, "IBM caused the project to fall behind schedule almost immediately by failing to assign adequate numbers and quality of personnel to the project." The development part of the project was supposed to have been completed by December 1990.

Also, the lawsuit alleged, because the new system is not fully operational and the old Unisys Corp.-based software cannot be run on the new IBM mainframe, FFMC will need to extend the lease on its old Unisys computer. Further, "IBM now insists that FFMC must purchase additional hardware from IBM beyond the equipment specified in the contract," the suit said.

DEC restructuring takes form

CONTINUED FROM PAGE 1

lington, Vt., and Springfield, Mass. The moves will result in the layoff of 670 workers.

Internal sources said final details of the restructuring are still being ironed out, though the company is under pressure to resolve organizational issues soon. "The structure alone won't do it — what's important is being more responsive to customers and figuring out whether we're building the right things in the right order and that it fits together with existing products," said one internal source familiar with the discussions.

The new structure is expected to go into effect in January.

A DEC spokesman confirmed details of a new model for industry business units, but said it is a work in progress. He refused to speculate as to when and how such a model might be made public by the company or when it might go into effect.

"The general reaction is that if DEC can execute this, it will be good for the customer — the individual business units will be driving the development of products rather than engineering," said Jeff Killeen, national local user group chairman of the Digital Equipment Computer Users Society.

But the new structure may also mean greater limits on resources out in the field. Since the vertical business units will be responsible for their own profitability, costs for support will come out of each group's sales pocket.

Field expertise will be planned and budgeted according to perceived need, but there may be unforeseen technical demands for which the resources may not be immediately available, according to Lynn Berg, program director of midrange computing services at Gartner Group, Inc., a market research firm based in Stamford, Conn.

Another potential impact for customers is the increasing pressure to move products through indirect channels, as opposed to the DEC sales force.

Last month, DEC began restructuring the way its sales force is compensated, and some sales units had their projections increased by $1.5 million, to $3.5 million.

"When one of us goes to the [DEC] office, the salespeople swarm around us," said Tony Corrato, a consultant at Mile High Information Systems, Inc., a Denver reseller. "They can't physically get to all the accounts themselves and have to focus on the highest paying ones, which means they have to push [the rest] off onto someone else."

The competitive pressure is also creating greater responsiveness on the part of some DEC sales representatives servicing larger accounts. "DEC is realizing that there are other manufacturers that have products that we need, and has become much more cost-competitive," said Robert Cyr, data center manager at PacifiCare Health Systems, Inc., a health maintenance organization based in Cypress, Calif.

"They always said they wanted to be partners in our business; it seems that they may now be trying to achieve that," Cyr added.

A $150 million outsourcing prize

Systems integration and consulting services figure prominently in DEC's proposed restructuring plans.

To drive home the point, the company last week trumpeted a recent $150 million outsourcing win from TransAlta Utilities Corp. in Calgary, Alberta, an $800 million utility.

DEC is running TransAlta's data center of four VAX 9000s and roughly a dozen VAX systems on several VAXclusters. The five-year outsourcing deal with DEC is part of TransAlta's overall plan to outsource the parts of the business that others can operate more efficiently, according to Tony Ansdell, director of information systems at TransAlta. Although the company will save a "nontrivial but not enormous amount" of money from the deal, the major objective was to bring in DEC's expertise, he said.

"With the speed of change going on in information technology, we were struggling to keep up with it and wanted to bring in someone who knew it well," Ansdell said.

Most of the 70 data center employees are now employed by DEC; and others were placed elsewhere within TransAlta. The equipment will stay on TransAlta books, and DEC will pay the systems' rental fees. In turn, DEC will charge users for CPU time.

"We're still in the teething problem area. We're trying very hard to work out a partnership rather than a supplier/customer relation, which means that we are making joint decisions," Ansdell said.

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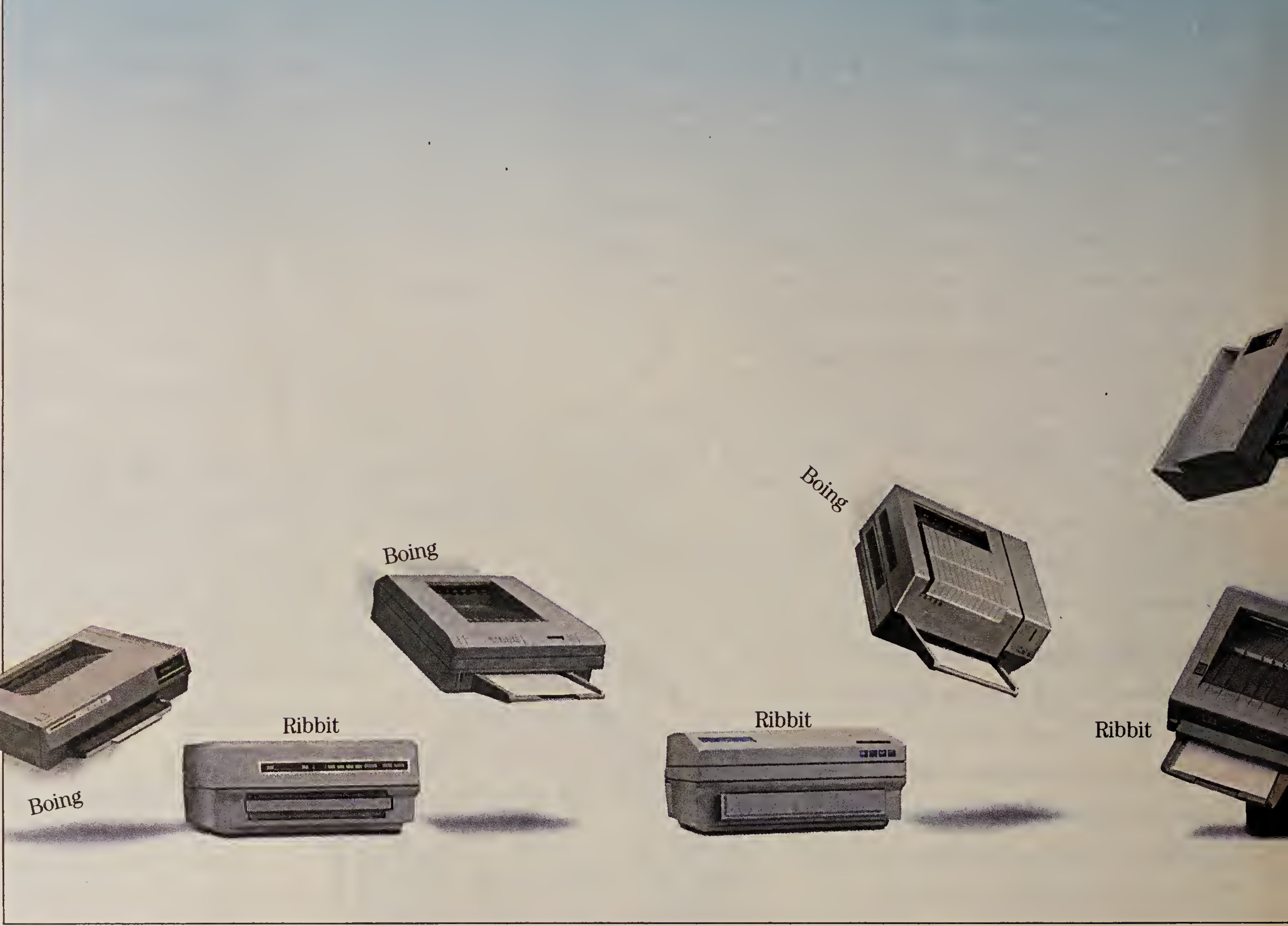

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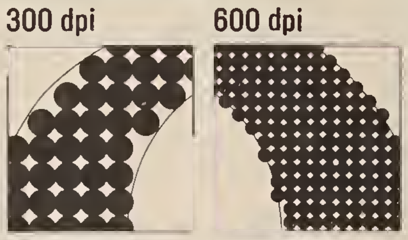

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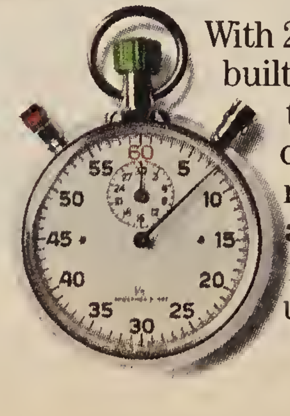

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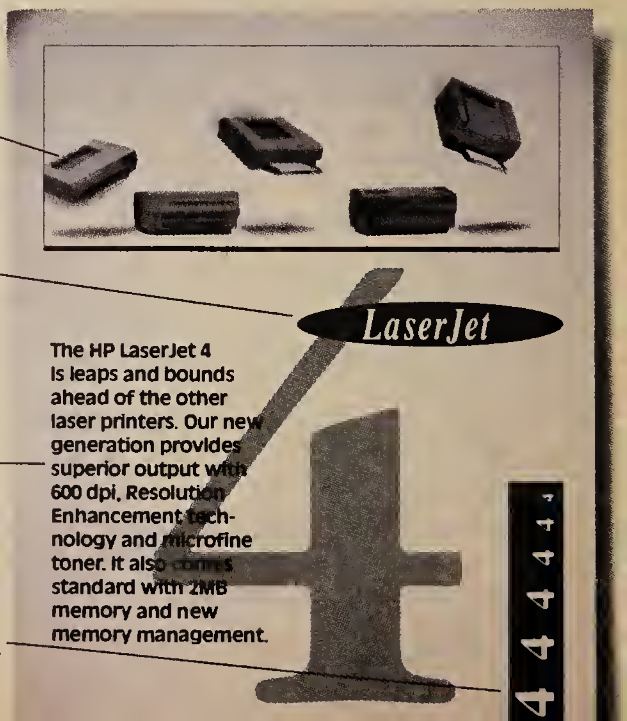

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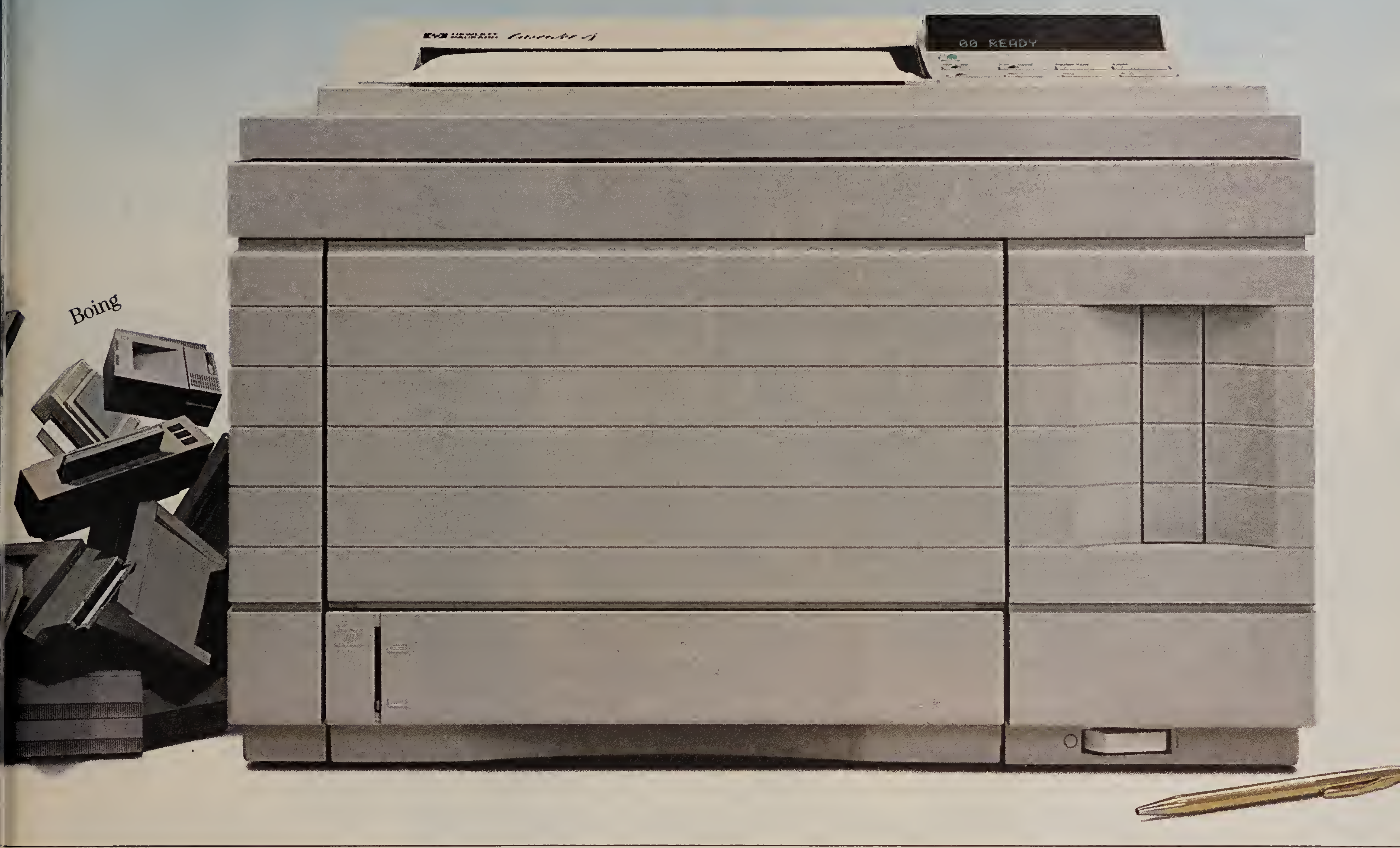

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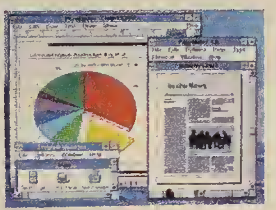

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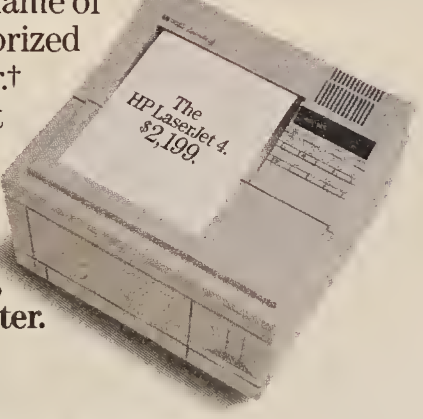

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ASK CEO takes helm at Ingres division

BY JEAN S. BOZMAN
CW STAFF

ALAMEDA, Calif. — Trying to infuse Ingres Products Division's U.S. operation with the spark of his recent European successes, The Ask Cos.' chief executive officer last week took the reins of the relational database division.

Pier Carlo Falotti, who joined Ask last summer after building Digital Equipment Corp.'s European unit into a $7 billion business, told *Computerworld* he needs to restructure Ingres' management to boost the firm's lagging U.S. market share.

"They have been losing market share in the U.S. in license revenue for the last 12 months," even though Ingres sales rose slightly, said Charles Phillips, a vice president of research at SoundView Financial/Gartner Group, Inc. in Stamford, Conn.

The U.S.' lag in Ingres business is noticeable. Ingres' U.S. business grew by just 3% last quarter, compared with 47% worldwide revenue growth since last year's first quarter, said Kenneth Burke, a principal at Pacific Growth Equities, a San Francisco brokerage firm. "In six quarters, they haven't made meaningful progress in getting the North American business cranked up," Burke said.

Falotti did not say how long he would remain president. Dennis McGinn, Ingres' president since 1991, was reassigned as executive vice president of strategic partnerships and business development.

Fast attack

Current and past presidents of the North American Ingres User Association (NAIUA) were critical of the speed with which Ingres has attacked its long-standing weakness in marketing.

"It's hard to see what the grand strategy is or should be," said NAIUA President Dwight Coles, who is slated to attend a planning meeting with Ingres executives in mid-November. "Users are starting to express concern about using Ingres because they don't see the market share or the advertising," he said. Coles also said product introductions have slowed to a trickle.

Users have faulted senior Ingres management for failing to convince managers at the largest U.S. corporations that Ingres could be a strategic product. "We've seen some improvement over time, but the change hasn't been as rapid as we would like," said Eric Palmer, former NAIUA president and chief executive officer at Palmer and Associates, Inc., a consulting firm in Atlanta.

Concurrent restarts engine

BY MARYFRAN JOHNSON
CW STAFF

OCEANPORT, N.J. — After a lengthy silence in the marketplace and a painful financial face-lift, Concurrent Computer Corp. resurfaced last week with a revitalized strategy and nearly four dozen new products for its real-time, crash-proof computers.

"They've done quite a credible job of recovering," said Terry Bennett, an Infocorp analyst in Portland, Ore. That recovery is relying on expanded software and service offerings as well as a dual hardware direction — assuring the future of its proprietary 3200 series line while beefing up its Unix-based Series 7000 line.

During the past two years, the $225 million vendor cut costs by $75 million, shrunk its employee count from 3,500 to 1,900 and managed to turn the past three quarters into profitable ones after a string of money-losing ones.

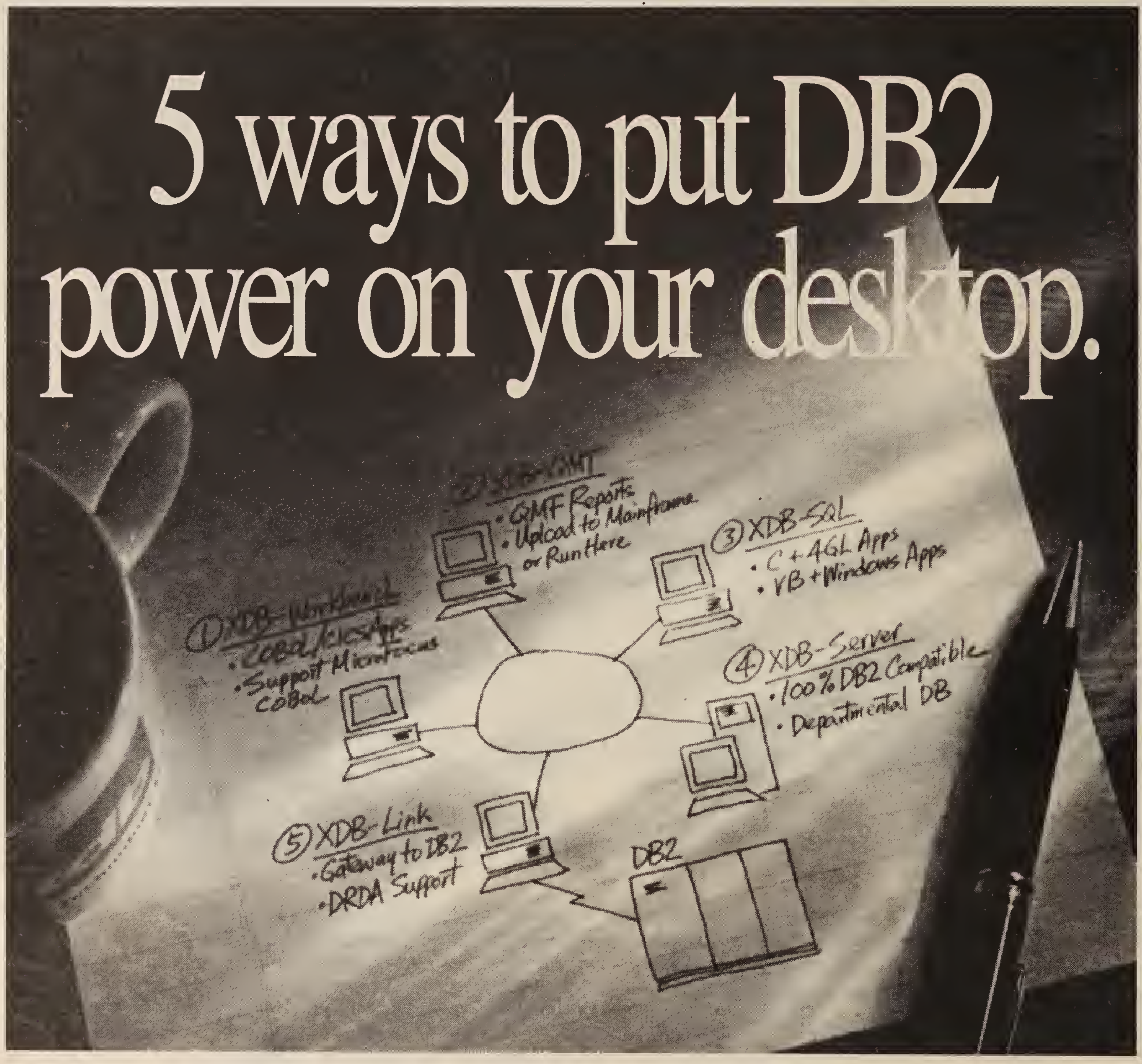
Back on its feet

"We're relieved to see that they're viable again," said John Baris, president of Concurrent's Interchange Users Group and director of computer systems and software at Yale University's experimental nuclear physics laboratory, which uses three of the 3200 series machines.

Concurrent's niche is real-time, fault-tolerant computing in life-and-death applications, such as nuclear power simulation and missile guidance, or financially critical operations, such as state lotteries and stock trading systems. During the past 25 years, Concurrent has built up an installed base of 32,000 systems.

At prices ranging from $5,000 to $150,000, the new products include a family of Motorola, Inc. 68040-based systems for the Series 7000 real-time Unix minicomputers, two new models in its proprietary Series 3200 line and new graphics display subsystems. The company also unveiled a host of productivity tools, networking and communications products and a broader array of services.

"We feel very strongly that they are moving in the right direction," said Tony Pastore, principal systems engineer at the radar systems division of Electronic Warfare Associates in Marlton, N.J., which purchased four Series 7000 systems a year ago.



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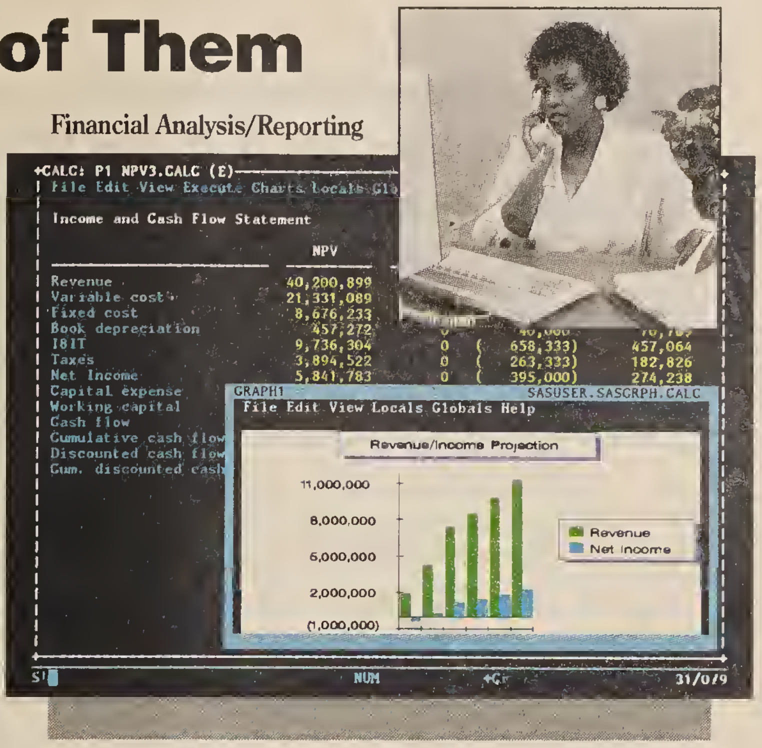

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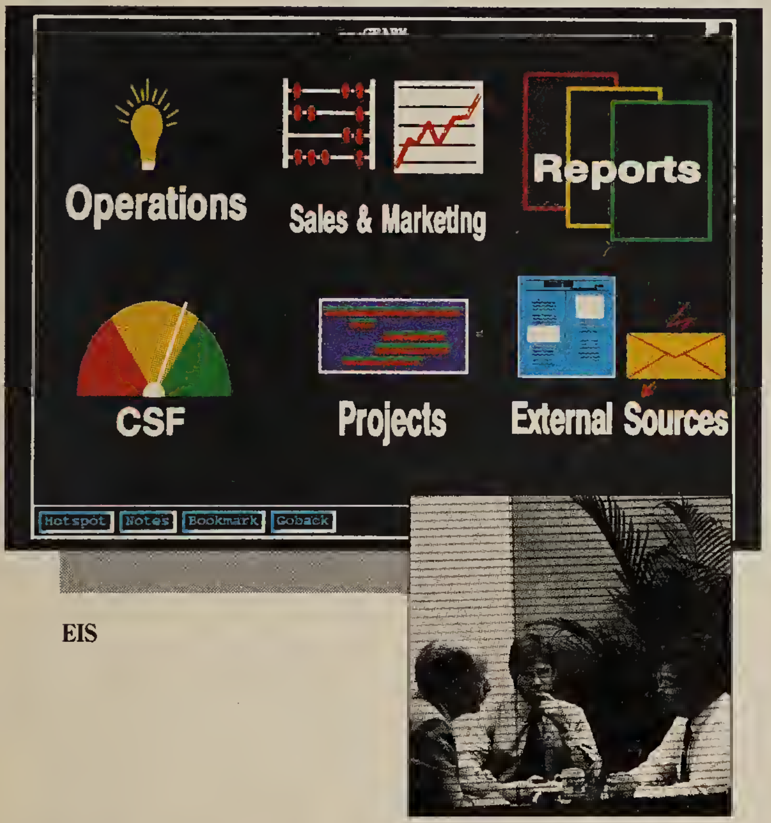

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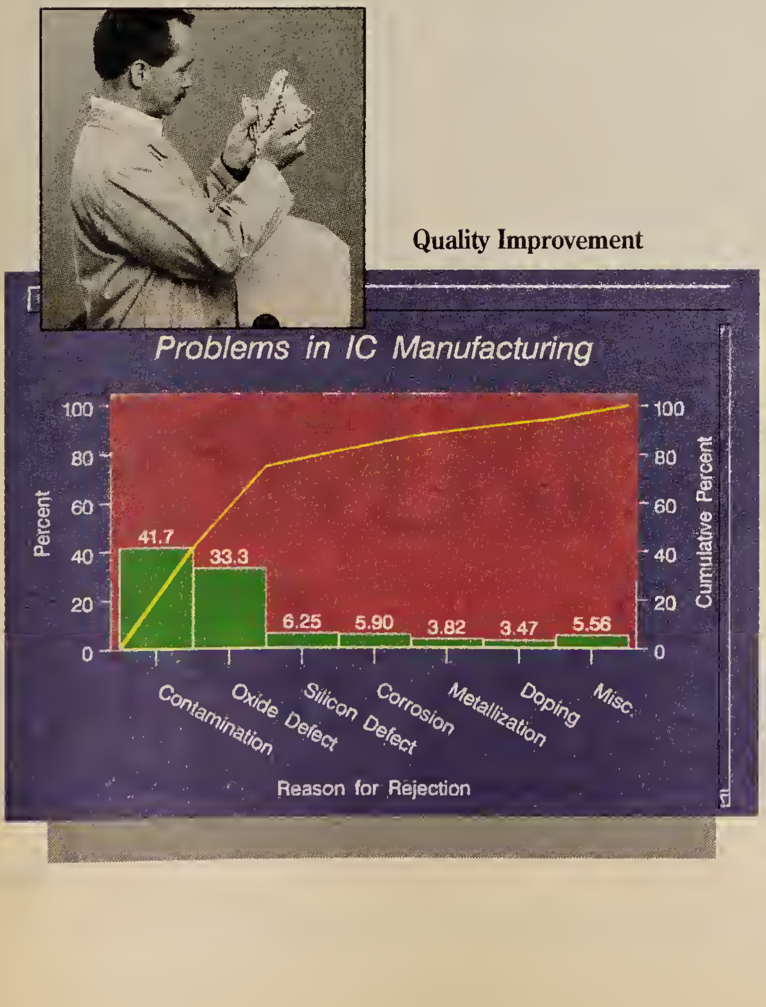
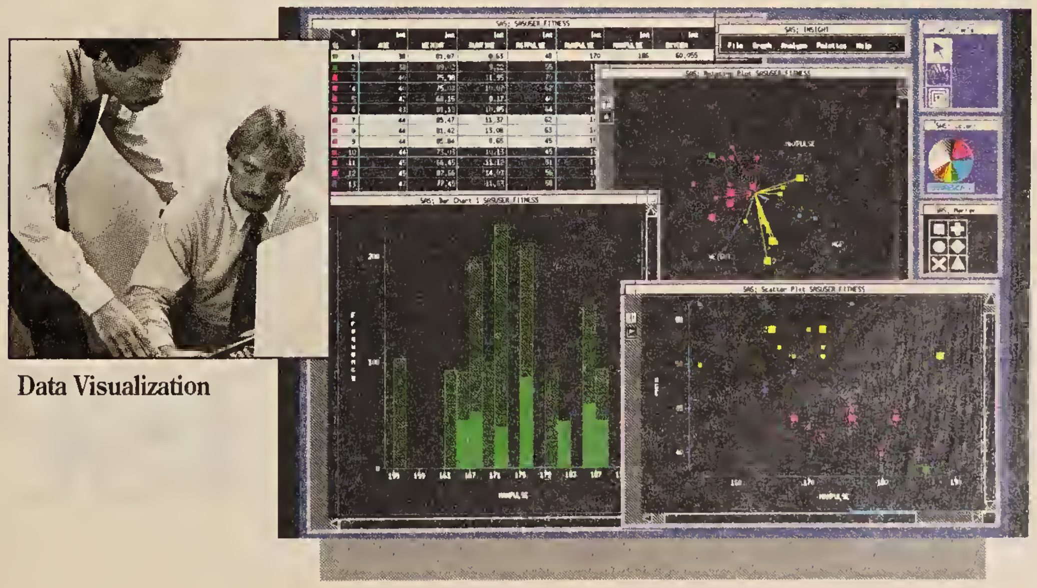


Quality Improvement



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Introducing

ThinkPad

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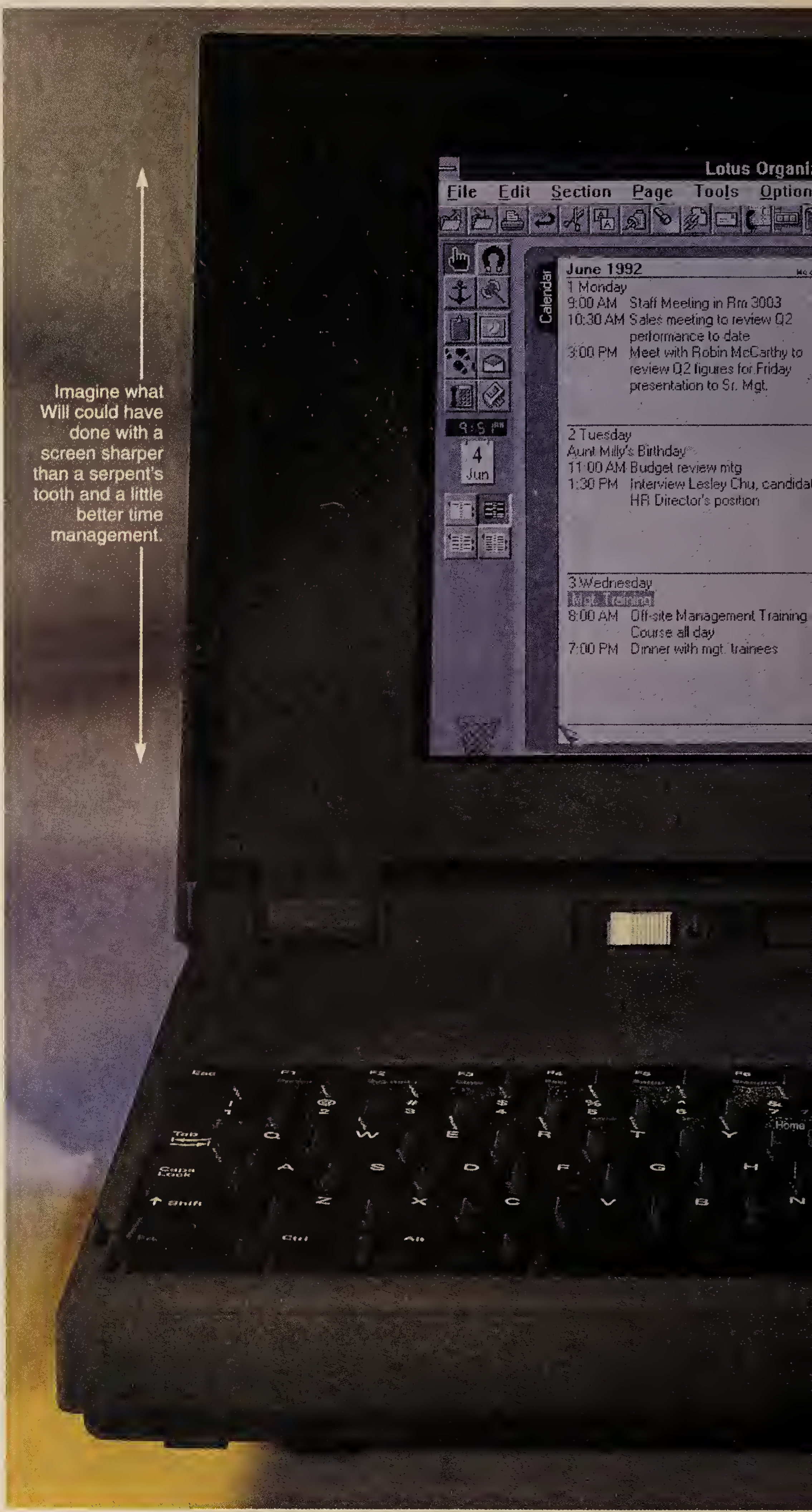
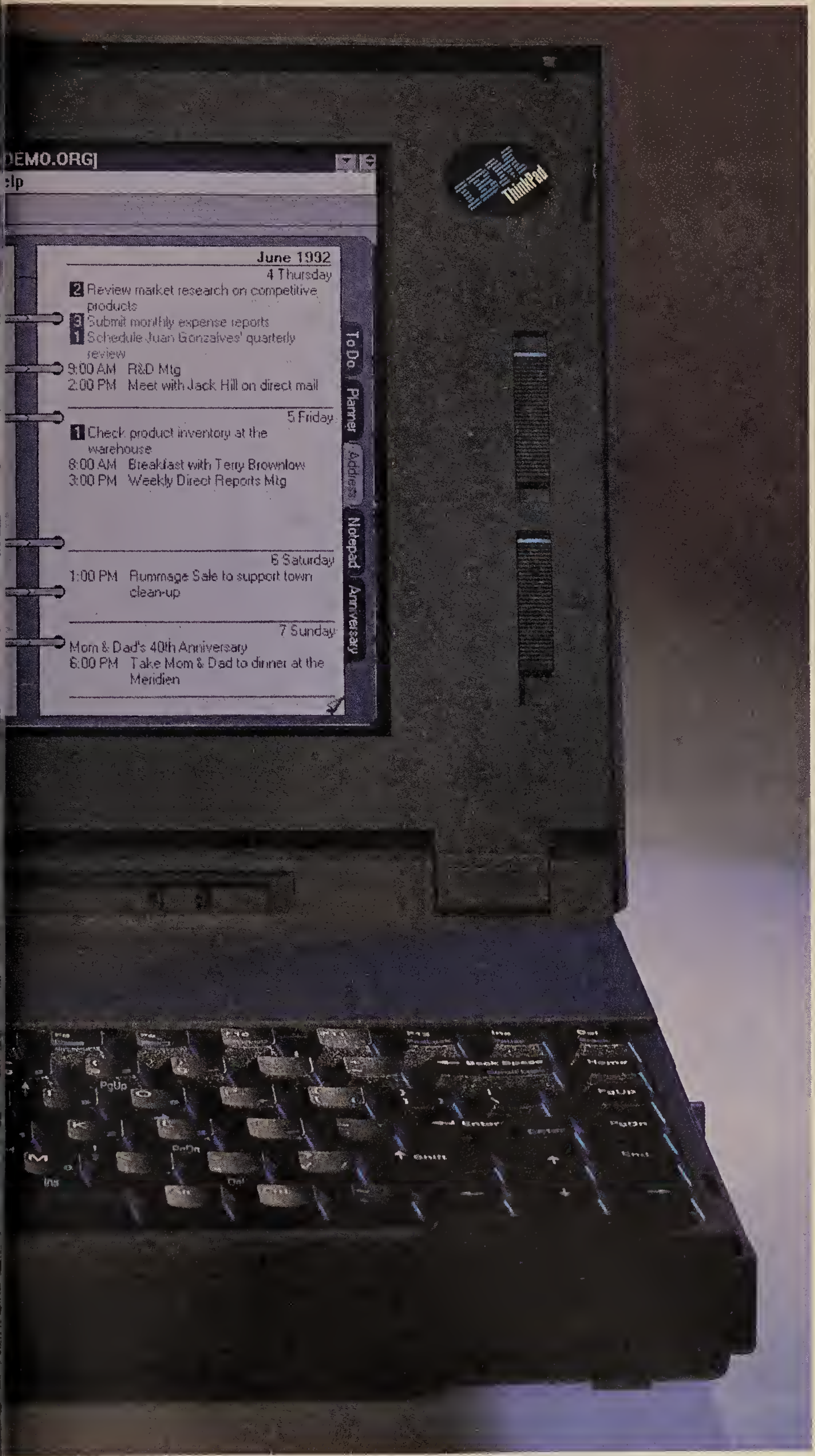

Lotus Organi
File Edit Section Page Tools Option
Calendar
June 1992
1 Monday
9:00 AM Staff Meeting in Rm 3003
10:30 AM Sales meeting to review Q2 performance to date
3:00 PM Meet with Robin McCarthy to review Q2 figures for Friday presentation to Sr. Mgt.
2 Tuesday
Aunt Milly's Birthday
11:00 AM Budget review mtg
1:30 PM Interview Lesley Chu, candida HR Director's position
3 Wednesday
Mgt. Training
8:00 AM Off-site Management Training Course all day
7:00 PM Dinner with mgt. trainees
4 Jun

Imagine what Will could have done with a screen sharper than a serpent's tooth and a little better time management.

It's what Shakesp used on a flig



June 1992

4 Thursday
2 Review market research on competitive products
3 Submit monthly expense reports
1 Schedule Juan Gonzalves' quarterly review
9:00 AM R&D Mtg
2:00 PM Meet with Jack Hill on direct mail

5 Friday
1 Check product inventory at the warehouse
8:00 AM Breakfast with Terry Brownlow
3:00 PM Weekly Direct Reports Mtg

6 Saturday
1:00 PM Rummage Sale to support town clean-up

7 Sunday
Mom & Dad's 40th Anniversary
6:00 PM Take Mom & Dad to dinner at the Meridien

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ADVANCED TECHNOLOGY

TECH TALK

Grand challenges

The National Science Foundation in Washington, D.C., has awarded its first set of grants for research on the nation's "grand challenges." One of the grants went to Robert Berwick at MIT, who will coordinate a team of researchers trying to design high-performance computers that can "see, move and speak." The multidisciplinary team will include biologists, mathematicians, computer scientists and engineers.

Full-size flat panel

Canon, Inc. is expected to release next month what it calls the world's first commercial ferroelectric liquid crystal display (FLCD). The 15-in. flat-panel FLCD offers a medium-resolution monochrome display, but Canon said it will release high-resolution monochrome and color 15-in. panels later in 1993. Canon is promoting the FLCD as a more practical alternative to the expensive, hard-to-produce thin-film-transistor (TFT) active-matrix LCDs currently used in high-end color notebook PCs. An FLCD offers high resolution and comparable contrast to a TFT display while featuring a simpler electrode structure that promises relatively low-cost, high-yield mass production, according to Canon.

Setting its sights

In the spirit of Star Trek, supercomputers at NASA's Ames Research Center in Mountain View, Calif., will try to seek out and analyze sounds no one has heard before. Starting last month, the laboratory began its search for faint radio signals that might indicate life on other planets. The decade-long survey of 400 billion stars will use radio telescopes in Southern California and Puerto Rico. Started on the 500th anniversary of Columbus' voyage to the New World, the project continues the 1960s Search for Extraterrestrial Intelligence. Organizers said they hope the computers hear something by 2001.

Technology firms look homeward

Three industries join forces to get a foot in the door of the home multimedia market

BY ELLIS BOOKER
CW STAFF

Shooting at the same target over the years, telephone, cable television and computer companies have independently explored ways to bring multimedia into the home.

These efforts hint at a shared belief that mass-market, multimedia information and entertainment services are an enormous business opportunity. To date, however, none of the sectors has managed to crack the home market.

Recently, representatives from the three industries formed a group to develop a common architecture for delivering multimedia services over a variety of communication networks. Called First Cities, the project is being organized by Microelectronics and Computer Technology Corp. (MCC), an Austin, Texas-based research and development consortium.

Analysts called the move a significant step toward the creation of multimedia network standards and infrastructures.

"It's what amounts to a game plan for where multimedia is going, and it's the first time I've seen it spelled out as succinctly by a group of players," said David Palmer, a senior consultant at Grassroots Research, a San Francisco, Calif.-based market research firm specializing in telecommunications.

The MCC project will be a test bed for various multimedia information and entertainment products.

"Originally, the focus of [this] program was how to build infrastructures in cities, making them into the information hubs for the next century," said Bruce Sidran, MCC vice president and executive director of First Cities. "Now the focus is the applications for creating the marketplace."

Besides MCC, the 11 participants in the group are: Apple Computer, Inc.; Bellcore; Bieber-Taki Associates; Corning, Inc.; Eastman Kodak Co.; IBM and Apple's joint venture, Kaleida Labs, Inc.; North American Philips; Southwestern Bell Technology Resources, Inc.; cable company Sutter Bay Associates; Tandem Computers, Inc.; and US West.

MCC officials contend that First Cities is seeking a common architecture for multiple network media — fiber optics, cable and telephone lines — and that it may also develop "hybrid" services using two or more transmission facilities.

Yet for now, a large cable TV or entertainment provider is notably absent from the group's roster.

"Right now, there isn't a lot of incentive to involve the cable companies because [their networks] don't offer the appropriate bandwidth, and the installed base is the same that the telcos have," Palmer said.

But Sidran argued that the group is definitely not a "telephone company" project.

"I've been espousing the belief that we don't want to pick winners and losers between the cable and the phone industries; [instead] we need some kind of comprehensive architecture," Sidran said. He added that First Cities fully expects to add members from major entertainment and cable companies in the future.

For Apple, which has been investigating home delivery of multimedia for some time, participation in First Cities means it will be able to build equipment and applications to the group's multimedia network standards as they evolve.

"Without network services, we can't build network devices," said Mike Liebhold, manager of media architecture research at Apple's advanced technology group.

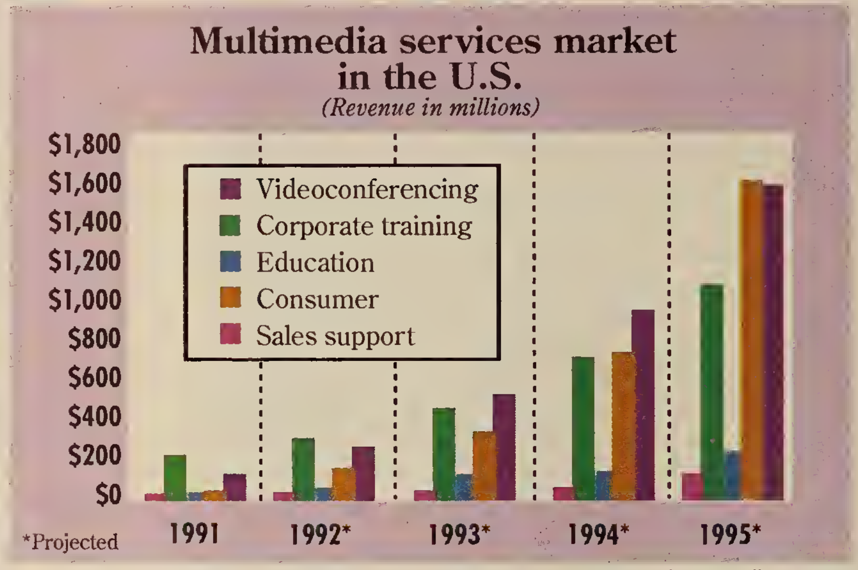
The creation of multimedia networks, he added, will require the input of many interests — networking and computer companies, as well as providers of transaction and entertainment services, will all need to be involved.

Fuzzy borders

"No one or two companies have the depth or breadth of expertise to pull something like this off," said Liebhold, who predicted the arrival of a host of new products that "blur the definition of computers, telephones and TVs."

The first set of applications that First Cities will consider will be multimedia teleconferencing, interactive games, entertainment on demand, shopping and transaction services, customized multimedia information, distance learning and health care.

The First Cities project will be implemented in three phases: a business plan; development of an architectural framework and experimental pilots, slated for early 1993 to December 1994; and the licensing or sale of First Cities technology and concepts to local information and network providers for commercial services in early 1995.



Source: Grassroots Research

CW Chart: Janell Genovese

IBM's multimedia universe

Through its Kaleida Labs multimedia joint venture with Apple, IBM will share in the results of the MCC/First Cities initiative. But, quietly, IBM has also made substantial investments of its own in networked multimedia and is reportedly close to forming a new company to provide interactive information to businesses and homes.

Published reports put IBM's commitment in the new company at more than $100 million and indicate IBM is seeking cable TV, telecommunications and media partners for the venture, which would provide video, software and interactive games and services.

At the heart of IBM's plans are its technologies for managing and distributing various data types over networks. IBM refers to these technologies as the Planet architecture. IBM has specified two implementations of Planet: Orbit for fiber-to-fiber networks and Comet for fiber-to-coaxial networks.

In conjunction with Rogers Communications, Inc., Canada's largest cable operator, IBM is testing Orbit at banks in Toronto. A second fall trial, with BellSouth Corp. as a partner, will provide services to Tennessee schools and offices.

Ultimately, services for home subscribers are planned, although IBM said it will target business applications first.

ELLIS BOOKER

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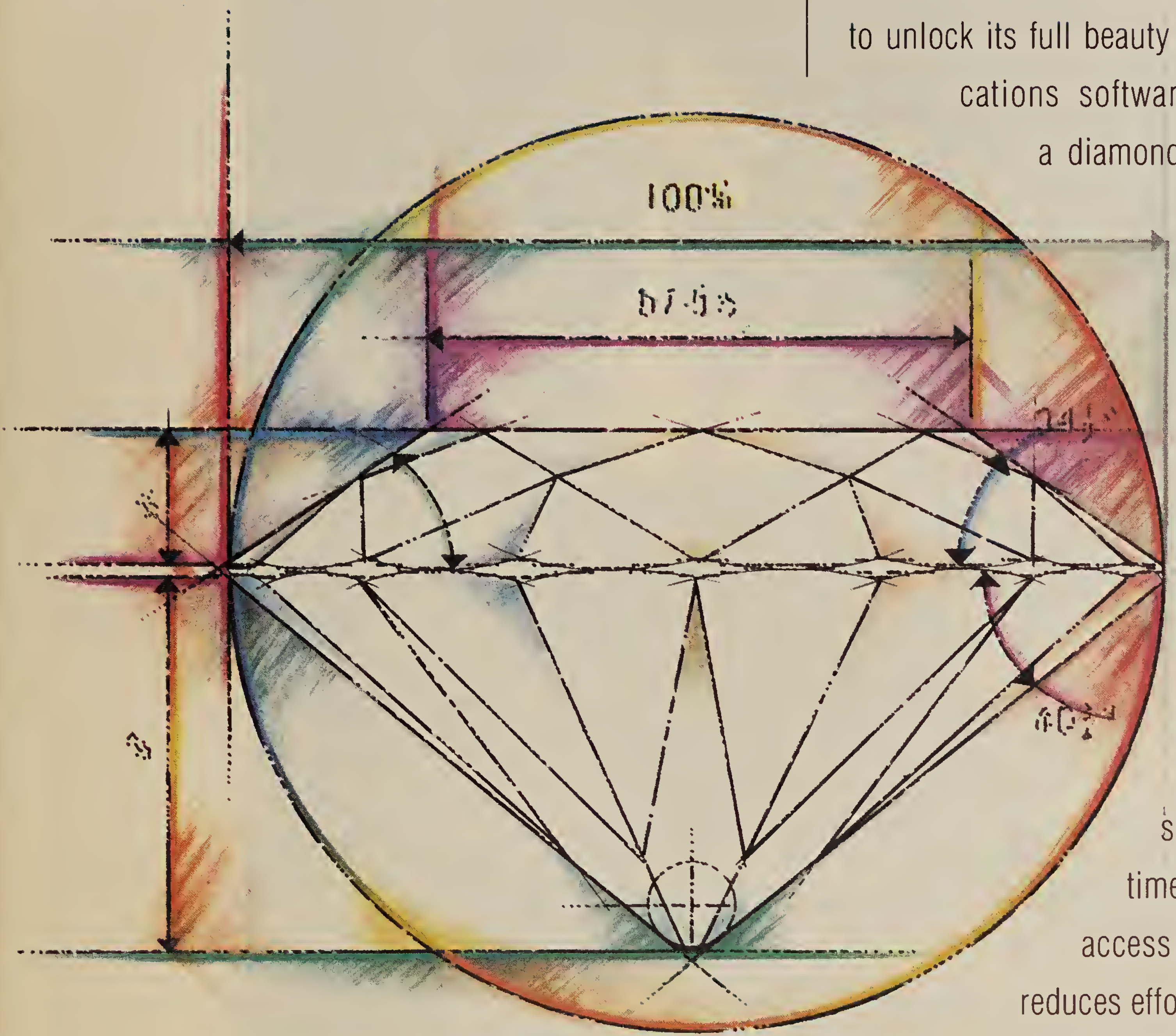

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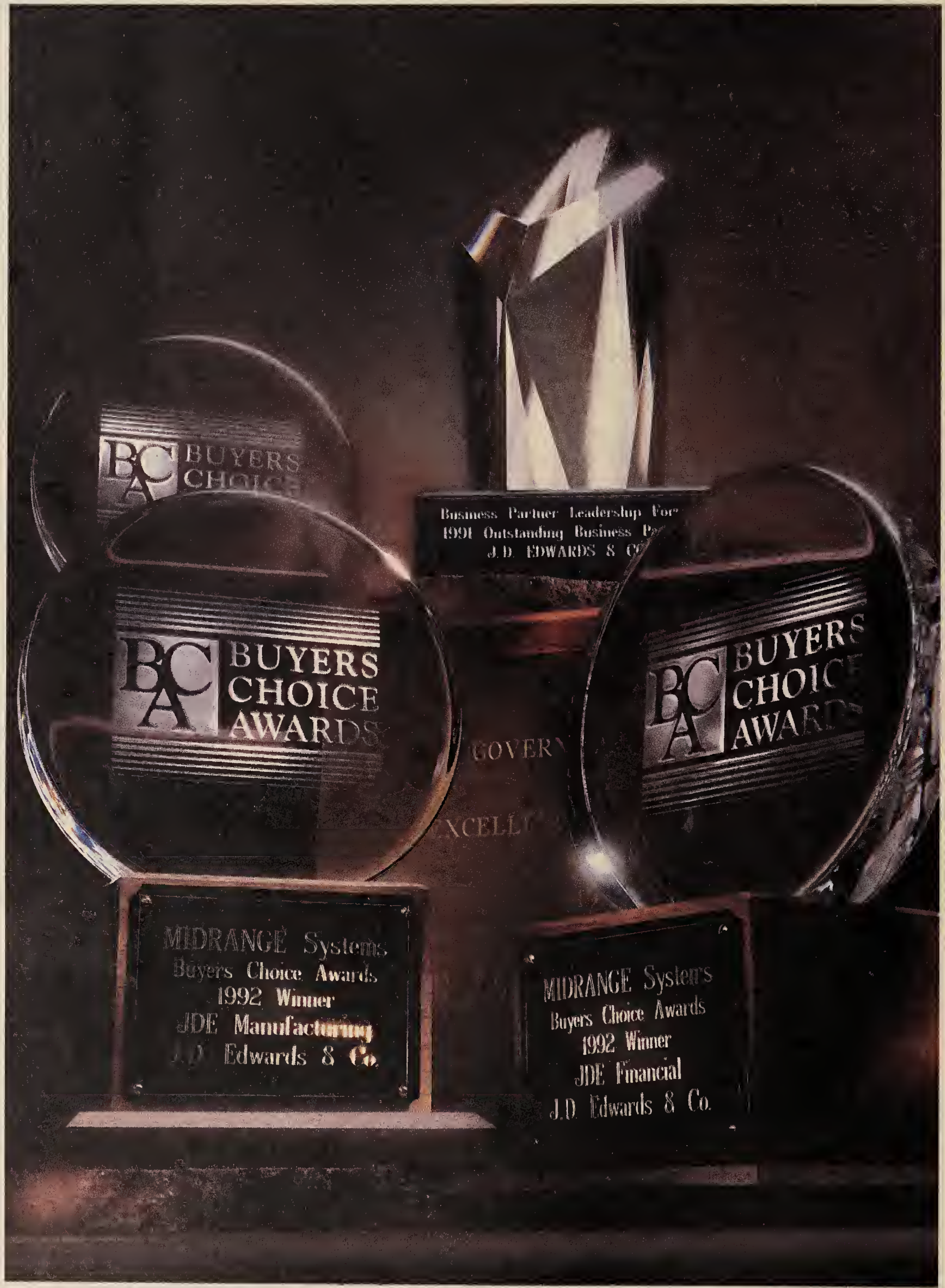
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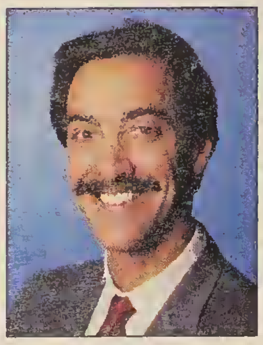
EDITORIAL

Change agent



It took me roughly three years to set up a tete-a-tete with Computer Associates Chairman Charles Wang a couple years back. For a gift, I bought him a satin warm-up jacket of the Boston Red Sox — a team that hasn't won a World Series in more than 70 years.

"This," I said, handing him the box, "represents the only thing I've waited for longer than an appointment with you."

Thankfully, he had a sense of humor and grace in accepting the present. As he showed in that and subsequent meetings, he also has a temper, a keen and shrewd intellect and an extraordinary drive — characteristics that could be turned on and off without a segue or without what we in the journalism business call a transition. In summary, he is somewhat enigmatic.

Thus, it is not surprising that the giant software company he directs can also reflect a mercurial nature. CA at times has angered some of its biggest customers to the point where some have been very outspoken with their dissatisfaction. This tendency has been noted in this paper and other publications, as well as in market analysts' reports.

On the other hand, other customers swear by the company and its products. Charles Wang is one of the more visible software executives at customer sites, and this attention is what customers increasingly demand.

Earlier this year, we picked up on a lot of unhappiness and anger in the user community about CA's pricing and licensing policies. The company insisted our stories were off the mark and that we'd asked the wrong questions of the wrong people.

Then, in the spring, CA reached a dynamic and innovative domestic licensing scheme with a major customer, paving the way for the announcement last month [CW, Oct. 19] of a flat-fee worldwide agreement with Citicorp. That deal, as well as a fixed-price deal struck last month with the U.S. Postal Service, portend a major pricing and licensing overhaul planned for next week that will put CA clearly ahead of its competition in liberal licensing agreements.

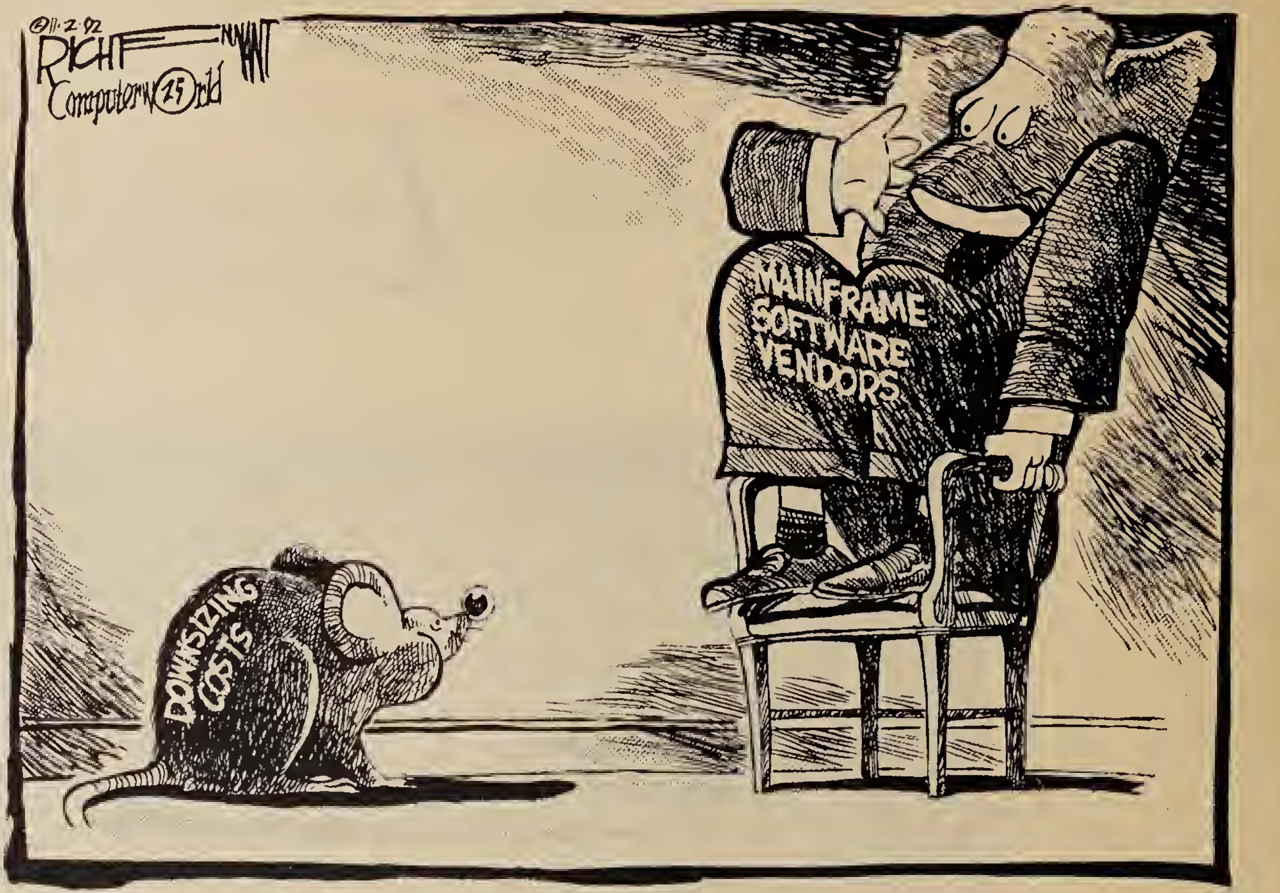
CA's actions on this very critical issue have drawn only applause from its customer base — even from some users who have been dissatisfied with the company. CA is now the risk taker in a market of risk-averse vendors.

Moreover, the company is acting from a position of strength. It has strung together several strong financial quarters in terms of sales and profit. Prudent companies have long been characterized as not being lulled by success but rather as being nervous that it will recede and acting aggressively to avoid that situation. This is what CA has done with the key licensing issue.

Is this the CA of the '90s: aggressive and proactive, tough and customer-driven? Certainly the user base would hope so.

Bill Laberis

Bill Laberis, *Editor in chief*



LETTERS TO THE EDITOR

There's no such thing as a good virus

The article "Can a 'good' virus be a bad idea?" [CW, Oct. 5] was misleading. It stated that the user community was "divided" over the issue. To the contrary, after doing computer security work with more than 100 organizations, I can tell you the user community is emphatically opposed to viruses.

From a secure systems design perspective, it is undesirable for unknown pieces of software to be doing things behind the scenes without the knowledge and acquiescence of both users and systems designers. Otherwise, the number and seriousness of potential side effects are just too great to tolerate.

A well-managed change control process requires that all changes to software and related system files be specifically approved prior to execution in a production environment. To promote "good" viruses is like promoting "good" nuclear weapons. . . .there is no security without stringent control.

Charles Cresson Wood
Sausalito, Calif.

Coverage of candidates lacks objectivity

Your editorial about technology in the election is a perfect example of the media's abuse of power during this year's election [CW, Oct. 26]. Using your position to influence public opinion while pretending to be objective is precisely why people distrust the press.

I find it very suspicious that you consider a vote for Perot to be a protest vote when a survey by your own publication shows him favored. Strange that an editorial on technology omits the only candidate who made his fortune in the computer industry.

Sometimes, what you don't say can be just as important as what you do say. In the future, if someone on your staff doesn't like a candidate, perhaps they should just say it directly.

David E. Long
Englewood, Colo.

Editor's note

Last week, my electronic mailbox was stuffed with letters from readers irate over the fact that Andre Marrou, presidential candidate from the Libertarian Party, was omitted from our presidential poll of IS managers [CW, Oct. 26]. Ordinarily I'd just plead "convention" in that the Libertarian Party is not included in any major polls. But given the response to our omission, our polls in the future will have the Libertarian choice on the ballot as well. — Bill Laberis

Why a monopoly?

Although I wholeheartedly agree with the conclusion of "Gimme access" [CW, Sept. 28], I want to suggest that Paul Gillin reconsider the answer to his opening question.

As he indirectly points out, the reason we have a local telephone monopoly to "bust up" is because of big government's prohibition of private carrier competition!

Bruce M. Hobbs
Alhambra, Calif.

Stick to the subject, not politics

Regarding "Clinton's civilian DARPA idea criticized" [CW, Oct. 5]: The facts presented are simple and indisputable: Gov. Bill Clinton proposed an idea, and his election opponent, President George Bush, attacked it.

The article devoted one paragraph to the proposal, and the other seven paragraphs, the lead sentence and the headline were devoted to Bush's attack on it.

Was the news the proposal, which you noted "computer companies generally supported," or was it Bush's attack?

Regardless of my — or the reporter's — political leanings, the article shows either reporting strongly biased toward Bush or a desire to accentuate the negative.

Each detracts from the story's news value, which would have been enhanced by more details of what Clinton actually proposed.

Gabriel Goldberg
Chantilly, Va.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

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Don't let stress get the best of your staff

JEFFREY OLSZEWSKI

The polls are in. Stress on the IS professional is up in a big way this year, and the light at the end of the tunnel is pretty dim. This means that those of us who are managers are under pressure to show exactly what kinds of leaders we are.

It's pretty clear what is causing the increase in stress levels. What is less obvious is how to fix it. A "rightsized" IS force is being barraged with urgent requests from a "rightsized" user community that has to do more with less. Deadlines are tight, and systems now get an unnerving amount of management attention.

IS professionals, managers and technicians have always flourished under a certain amount of stress. But there is a big difference between the kind of stress that keeps adrenaline flowing and makes the day exciting and the type of relentless stress that is the result of unrealistic expectations.

It is the responsibility of middle management (what's left of us, that is) to reduce the bad stress while maintaining the good stress.

I first saw this kind of stress management in action several years ago, when I was working as a programmer on a high-pressure project. The way our manager dealt with the stresses of that project helped all of us do a better job. It wasn't until later, after having worked on a number of other projects for a number of other managers, that I realized how rarely attention is paid to this issue. Now that I'm a manager myself, I try to follow the lead of that first good teacher.

Here are some of the lessons I learned from him:

- **Distinguish between venting and griping.** A certain amount of venting should be expected. Venting allows people to get things off their chests, so they feel ready to attack the task at hand once again.

Griping and bickering are different. These kinds of continuing negativity are damaging to morale and cannot be tolerated.

- **Be sensitive to the effects of stress on various personalities.** Every staff member is an individual and will have both a different tolerance for stress and a different way of expressing feelings. It's up to us as managers to make sure that we find out how high-stress situations are affecting everyone.

I can clearly recall one instance that brought this home to me. After several weeks of heavy overtime, I was approached by a model employee. She barely made it into my office before the tears began to flow.

This wasn't a person who voiced complaints easily, and I hadn't sensed the frustration she was feeling. I should never have let the situation get that far without noticing what the situation was doing to her.

Wayne Vincent

- **Don't let your best performers shoulder the whole burden.** A balanced effort is important. It can be very damaging to have star performers overloaded while everyone else is leaving on time.
- **Don't let overload become a way of life.** A colleague of mine once told me that when overtime begins to seem like the normal way to operate, you're in trouble. Overtime should be an occasional measure invoked when extra effort is required to get a particular job done.
- **If expectations are unrealistic, say so.** If the due dates that are being imposed are unrealistic, we owe it to ourselves and to our staffs to let upper management know. This isn't necessarily a great career enhancer, but neither is losing half your staff to burnout.

If it turns out that there really is no cause for alarm, you'll be able to get out from under some of the stress you've been carrying around.

And even if a problem does exist, but you are overruled, the fact that you tried to do something may improve morale among your staff members. Nobody likes to see the manager strike out, but it's a lot better — and less stressful — than working for someone who doesn't understand your reality.

Olszewski is data processing manager at Beloit Corp. in Lenox, Mass.

Think twice before you topple the control tower

HOWARD GLASSMAN

There once was a manager assigned to reduce his firm's travel costs.

To get started, the manager visited the company airport. His first view was of all the big iron parked along the ramp. "Do we really require something so big, complex and expensive in order to travel?" he asked himself. "What if we could fly in smaller planes that were just as fast and just as well-constructed?"

The executive listed the cost factors that go into operating big planes. In doing so, he discovered a large and sophisticated infrastructure had evolved to ensure that planes were properly maintained and tested, crews were properly trained, schedules were met and so on. Much of this struck him as wasteful excess.

In the end, the executive reported to his management that travel expenses could be cut by implementing a fleet of departmental planes. Departmental pilots could be hired for less, and the company could avoid the expense of complying with all of the bureaucratic regulations imposed by the guys in the control tower. In fact, the manager added, most of the people in the control tower could probably be fired when departments began handling their own transportation.

Lack of coordination might involve a little more risk, but the company could afford to lose a plane and its passengers every now and then — unless of course the passenger was a mission-critical member of the staff.

Sound foolish? Sound familiar?

Worth the risk?

Downsizing from mainframes to midrange or PC LAN environments can reduce costs and give users some freedom from the bureaucracies that have, for so long, controlled the glass house. But has the risk been adequately evaluated? Have the necessary compensating controls been put into place?

Moving an application from one environment to another is not, in and of itself, justification for reducing controls — just as flying a small plane does not justify noncompliance with federal flight regulations.

Downsizing is going to occur, and it should. Smaller machines are gaining power, and there is an upper limit to how much power most organizations require. If this upper limit drops into the envelope of small system capability, then sustaining a mainframe environment makes little sense.

Consider this

Before the move is made, explicit decisions must be made to safeguard company resources.

- If you need and have a backup and recovery methodology on the mainframe that can guarantee recreation of your organization's source code to any date in the past five years, then you must make sure you can do this in the downsized environment as well.
- If you have a 24 to 7 user support ratio in the data center, then you must continue to provide that level of service.
- If you have an operations staff whose function it is to ensure that all required processing occurs in proper sequence and on schedule, and that information is available to users within a certain amount of time, you must continue to meet those commitments in the downsized environment.

Organizational structures and operational procedures that have evolved in the mainframe environment are generally well-tuned to this task. A less structured, more ad hoc user-operated environment may not be.

A recent article in *Computerworld* mentioned an insurance company that was downsizing [CW, Aug. 24]. One of the enticements listed was, "Batch jobs, like posting premium payments, can be activated by programmers from a PC at home."

Knowing as I do the kinds of controls that are required for posting programs in a bank, I have to wonder if the person who made this statement would like to be on a flight through stormy weather, knowing that the navigation was being handled by someone dialing in from home.

Glassman has been involved in the information security field for nine years and is currently manager of information security at Pacific First Bank in Seattle.

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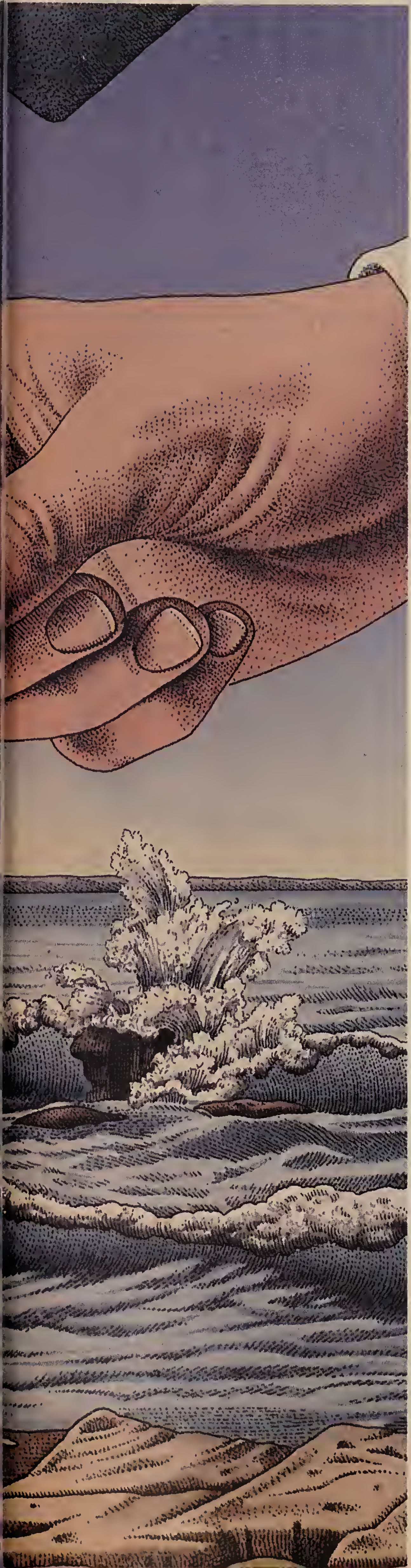

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IN BRIEF

Apple ships System 7.1

■ **Apple Computer, Inc.** has announced the shipment of System 7.1, the latest version of its operating system for the Macintosh line.

System 7.1 includes WorldScript, which allows it to be used with "double-byte" languages such as Japanese and Chinese, which require two bytes for each character of text. System 7.1 also comes with a fonts folder for type integration, modular support for new Macintosh models, integrated TuneUp support and a bundled version of QuickTime 1.5.

■ **Austin Computer Systems** said it will ship PCs that use the Video Electronics Standards Association (VESA) VL-Bus local-video bus. Austin will use the VESA standard in its high-level desktop PCs. The systems were designed to accept VL-Bus adapter cards that will provide local-bus Small Computer Systems Interface and local-area network interfaces.

The Austin 486/ DX2-66 VLB system with a 200M-byte integrated electronics hard drive, 4M bytes of random-access memory and a 14-in. Super VGA monitor will cost $3,190.

Users eyeball OS/2 slimdown plan

BY ROSEMARY CAFASSO
CW STAFF

IBM's concept of a streamlined OS/2 2.0 is good news for users, although some customers said they were a little unclear about what IBM would do to make this concept a reality.

"It depends on what they take out," said George Oliver, manager of information delivery technology at the Royal Bank of Canada. "If it's functions, no, we're not interested."

IBM plans to release the slimmer OS/2 in early 1993 and said the product will operate more effectively on a 4M-byte system.

Before OS/2 2.0's arrival last year, IBM had discussed a plan to introduce a so-called Lite version of the operating system with fewer features. This time, however, the goal is to rewrite some of 2.0's code and remove code redundancies so functions remain the same but the operating system takes up less space in memory.

With the smaller version, OS/2 would also become a more realistic choice for portable and laptop computers.

While IBM currently states that OS/2 2.0 requires only 4M bytes of memory, the company also says that to run it with several applications and to use the multitasking feature, a user would really need at least 6M bytes and, in some cases, up to 8M or 12M bytes.

"We are not fully addressing the problem we have at 4M bytes," said Lois Dimpfel, IBM's Personal Systems director at the OS/2 Programming Laboratory in Boca Raton, Fla.

Yet Ronan McGrath, vice president of information systems and accounting at Canadian National Railways, was a little uncertain about the 4M-byte goal because "the PCs coming in now are coming in at 8M bytes anyway."

Dimpfel said 4M-byte machines "are still the sweet spot of the industry, especially in the laptop and notebook environments. They are delivering at 4, and when you deliver them preloaded [with 2.0], you want them preloaded with software that works well."

Dimpfel said IBM will not remove features from OS/2 but instead plans to fine-tune it by recoding portions and getting rid of redundancies. She also said the goal is not simply to cut the 3 million lines of code but to write many of them better.

All in good time

"Sometimes, you can make code better just by thinking harder," said Paul Pignatalli, an OS/2 2.0 reseller and owner of The Corner Store. "With time, you can always do a better job."

Oliver said an IBM official told him two years ago that programmers who wrote 2.0 had done "a good job of shrinking the kernel." At that point, IBM said it could do more shrinking but stopped because the code was pretty good. "So, maybe they are revisiting it now," Oliver added.

IBM will also tune performance to improve system response time. These fixes started shipping with the Service Pack that was released last week. Additional boosts will come by year's end with the point release of 2.0, Dimpfel said.

The streamlining, however, focuses on the actual operating system mechanics. Reducing 2.0's size means more programs and files can be stored along with it in main memory. That requires fewer trips to disk to fetch things — tasks that are now bogging down the system.

Intel outlines chip plans: 'Pentium' to ship in Q1

BY MICHAEL FITZGERALD
CW STAFF

NEW YORK — "Pentium" was probably not the other name Shakespeare had in mind for his rose, but Intel Corp. liked it well enough for the chip that has been otherwise known as the 586 and the P5.

Intel recently said Pentium is due to hit the market late in the first quarter of 1993, concurrent with systems that use it. The Pentium plan was one piece of an Intel strategy that Intel President Andrew Grove outlined to the New York PC Users Group recently.

The company plans to unveil 25 new I486-class processors next year, all 3.3V products that support Smart Power Management — Intel's scheme for reducing power consumption on its chips. Grove said the chips would range from the high-end DX2 processors down to 486SL products that would run in subnotebooks. These chips will also be aimed at desktop systems for power-conscious PC buyers, he added.

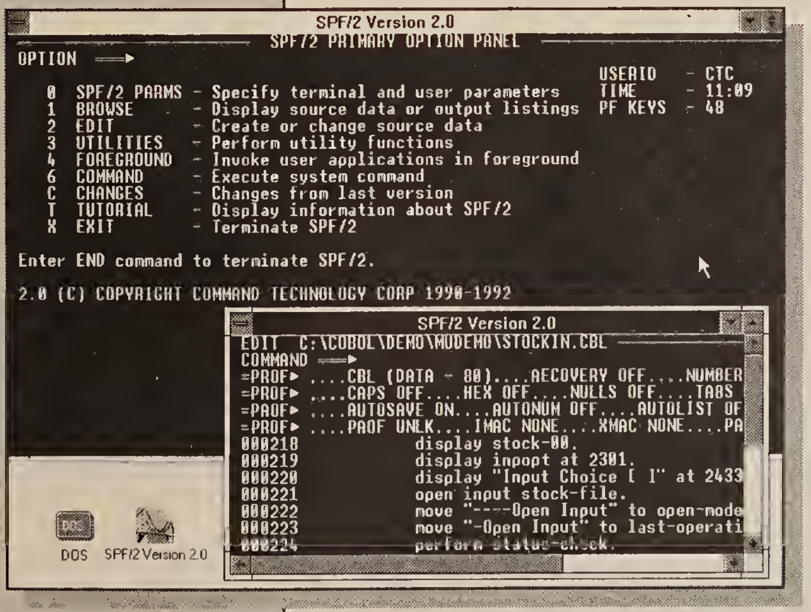
Industry sources said they expect the first processor, a 486SL, to appear next week, although Grove would not confirm those reports.

Pentium, a 32-bit chip that will run at 66 MHz, is expected to go into servers initially, where its near 100 million instructions per second performance will have more attractive price/performance than desktop machines. IBM, Compaq Computer Corp. and Digital Equipment Corp. are likely to announce systems that use Pentium when it is introduced.

Previously, Intel said it would avoid the 586 moniker for its 486 follow-on processor because numbers cannot be trademarked. Grove charged that when competing chip makers such as Advanced Micro De-

Continued on page 38

The *EASY* way to right-size...



```
SPF/2 PRIMARY OPTION PANEL
OPTION ===>
                                                        USERID   - CTC
   0  SPF/2 PARMS - Specify terminal and user parameters     TIME     - 11:09
   1  BROWSE      - Display source data or output listings  PF KEYS  - 48
   2  EDIT        - Create or change source data
   3  UTILITIES   - Perform utility functions
   4  FOREGROUND  - Invoke user applications in foreground
   6  COMMAND     - Execute system command
   C  CHANGES     - Changes from last version
   T  TUTORIAL    - Display information about SPF/2
   X  EXIT        - Terminate SPF/2

Enter END command to terminate SPF/2.

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EDIT   C:\COBOL\DEMO\MUDEMO\STOCKIN.CBL
COMMAND ===>
=PROF> ....CBL (DATA - 80)....RECOVERY OFF....NUMBER
=PROF> ....CAPS OFF....HEX OFF....NULLS OFF....TABS
=PROF> ....AUTOSAVE ON....AUTONUM OFF....AUTOLIST OF
=PROF> ....PROF UNLK....IMAC NONE....XMAC NONE....PA
000218              display stock-00.
000219              display inpopt at 2301.
000220              display "Input Choice [ ]" at 2433
000221              open input stock-file.
000222              move "----Open Input" to open-mode
000223              move "-Open Input" to last-operati
000224              perform status-check.
```

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Integrated card hits fax/modem market

BY CHRISTOPHER LINDQUIST
CW STAFF

SANTA CLARA, Calif. — National Semiconductor Corp. is slated to hit the PC communications retail market this month with an integrated card that includes data, fax, "business audio" and voice capabilities.

At a list price of $279, the TyIN 2000 card drops squarely into the standard fax/data modem market and undercuts competing integrated cards, such as The Complete PC's Complete Communicator, which lists for $499 and does not include the voice annotation features of National Semiconductor's product.

What differentiates TyIN 2000 from the competition, for the moment, is the business audio feature, which allows users to add spoken comments to Microsoft Corp.'s Windows documents and then transfer these files via fax, modem, network or disk.

The audio can be input with either a microphone or a standard telephone handset and can be played back through the integrated speaker, external speakers or the handset.

However, fancy hardware specifications do not guarantee success in a market where leapfrogging standards tend to leave products that are even a few months old in the dust. To help ward off quick obsolescence, National Semiconductor has designed the TyIN 2000 to be software upgradable — meaning that as standards change, users will be able to download software to upgrade the card.

Upgrade-conscious

That feature caught the eye of industry analyst Julie Groll at Dataquest, Inc. in San Jose, Calif. "One thing that caught my attention was commitment to upgrade users to any standards that come out," she said.

The TyIN 2000 also allows users to turn a PC into a voice-mail system, including multiple mailboxes. Mailboxes can be password-protected and accessed remotely via a Touch-Tone phone.

In addition, the card includes 9.6K bit/sec. send and receive fax capability, a 2,400 bit/sec. data modem and automatic call sensing to determine whether an incoming call is voice, data or fax. A scanner can also be attached to the card.

Groll noted that while National Semiconductor has a lead in the integrated communications market for the moment, other products will arrive soon. "At this point, it is fairly unique and the price is low," Groll said. But, "I would expect to see other products similar to this to follow."

Intel outlines its strategy for 486 chip successor

CONTINUED FROM PAGE 37

vices, Inc. used the number 386 in product names, it damaged Intel and "misled" the market.

Grove told the New York user group that IBM has a license to make the Pentium chip for its own use, as it does with current Intel microprocessors. IBM has used this right to build custom versions of Intel's 386SX and 486SX processors, although IBM would not comment on what it might do with Pentium.

Grove also hinted at a new product for Intel.

"For video computing .!.!. we need to have the ability to have software playback — to bring video playback to all computers," Grove told the audience.

Analysts said Intel is likely to show at Comdex/Fall '92 a software product that will let users record and manipulate sound and motion video images and create enhanced electronic mail and other applications.

SX in the works?

Intel officials denied reports that the company is working on an SX version of Pentium that will make it easier for systems vendors to build Pentium-based systems. Paul Otellini, Intel's vice president and general manager of the microprocessor products group, said, "Pentium will be a family over time, but I was very surprised to read about this product since it doesn't exist."

Sources close to the company said Intel is working on a Pentium OverDrive processor that will allow chip-level upgrades from the 486DX to the Pentium processor when it becomes available. Several vendors, including DEC, Compaq and AST Research, Inc., have already designed the new Pentium OverDrive socket into their existing OverDrive-ready systems.

In response to an audience question, Grove denied persistent rumors that Intel has been unable to meet demand for its 486 processors, forcing it to parcel them out to select vendors. Spot prices on the chip gray market have jumped $100 recently due to these reports.

Securities analysts who attended a briefing with Grove earlier in the day said he had conceded that Intel was close to being unable to meet demand.

Today's Macintosh wasn't just created for your users.

Olivetti, Toshiba to unveil notebooks at Comdex/Fall '92

BY MICHAEL FITZGERALD
CW STAFF

Bells and whistles are a staple of the PC industry, but some notebook advances look like they will bring a whole orchestra into play.

For instance, Toshiba Corp. is working to build paging capabilities into future notebook products, according to sources close to the company. The technology may be shown at the Comdex/Fall '92 show later this month, according to industry observers, although Toshiba declined to comment on those reports.

Toshiba is negotiating with PageMart, Inc. in Dallas for the pager technology — said to be dubbed ReadyMessage — that would allow the user to have paging system alerts ring through the laptop system and appear on the notebook screen.

The one-way messaging from this unit could allow voice-mail messages to be handled the same way and could eventually lead to two-way page-and-respond systems.

Sources said Toshiba is close to bringing these ReadyMessage-capable systems to market. The systems are said to use Intel Corp.'s soon-to-be-announced I486SL processor.

Decisions, decisions

Toshiba is said to still be weighing whether to build in the pager unit or handle it as a Personal Computer Memory Card International Association (PCMCIA)-based add-in device. Toshiba refused to comment, and PageMart did not return phone calls.

Sources also said Olivetti Office USA will use Comdex to mark the U.S. debut of Olivetti's Quaderno, a 2.25-pound, 4- by 6-in. combination notebook and voice-processing system.

The Quaderno, which shipped in Europe in midsummer, records voice messages on its hard drive and allows for voice annotations to files.

Keys on the system record, rewind, play and fast-forward as on a tape recorder. The product also has a built-in microphone and speaker and uses a digital signal processor from Analog Devices, Inc.

The hard drive holds 20M bytes of data, and the system uses a NEC Corp. V30 processor, an Intel 80286-class product. Four AA batteries power it. Pricing may be below $1,000 in the U.S., a source said.

An Olivetti spokeswoman confirmed that Quaderno will be at several booths at Comdex, including the PCMCIA booth, where some models will be given away to show attendees.

She said Olivetti has not decided if it will announce U.S. availability for the product at Comdex.

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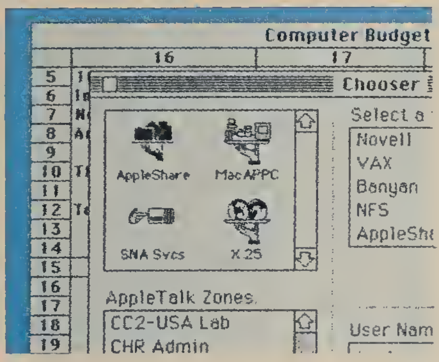

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TI, Grid color new portables

BY MICHAEL FITZGERALD
CW STAFF

Vendors continue to add color to their notebook product palettes.

The past two weeks saw Texas Instruments, Inc. and Grid Systems Corp. add their names to the list of vendors with color notebooks.

TI in Temple, Texas, brought out two color notebooks among its four new notebooks. All four TI products bundle Microsoft Corp.'s Windows 3.1 and are based on 486-class processors.

The TM4000 WinDX2/40 Color features a 20-MHz/40-MHz 486DX2 processor, 8M bytes of random-access memory and a 200M-byte hard drive. The price is $4,499.

The TM4000 WinSX/25 Color has 4M bytes of RAM and a 120M-byte hard drive. It costs $3,699. Both color notebooks weigh 6.3 pounds.

The 5.6-pound monochrome units include the TM4000 WinDX2/50, which features Intel Corp.'s 25-MHz/50-MHz 486DX2 processor, 8M bytes of RAM and a 200M-byte hard drive for $3,899. The TravelMate WinSLC uses TI's 25-MHz 486SLC and costs $1,999.

Grid, which is moving to Dallas from Fremont, Calif., introduced a 6.9-pound, 25-MHz Intel 80386SL-based notebook, the 1660C, with an active-matrix color screen, a built-in trackball pointing device and an optional docking station.

It will cost $4,495 with 4M bytes of RAM and a 125M-byte hard drive.

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- $995, if paid prior to March 26, (without a discount coupon).
- $1,095, if paid after March 26, or at the conference.

The registration fee purchases a full conference registration, including meals, one set of conference proceedings and a one-year membership in IDUG with all its membership benefits.

For more information on this conference and IDUG, please call IDUG Headquarters at (Chicago, Illinois USA) 312-644-6610 or 312-527-6777, or FAX 312-321-6869.

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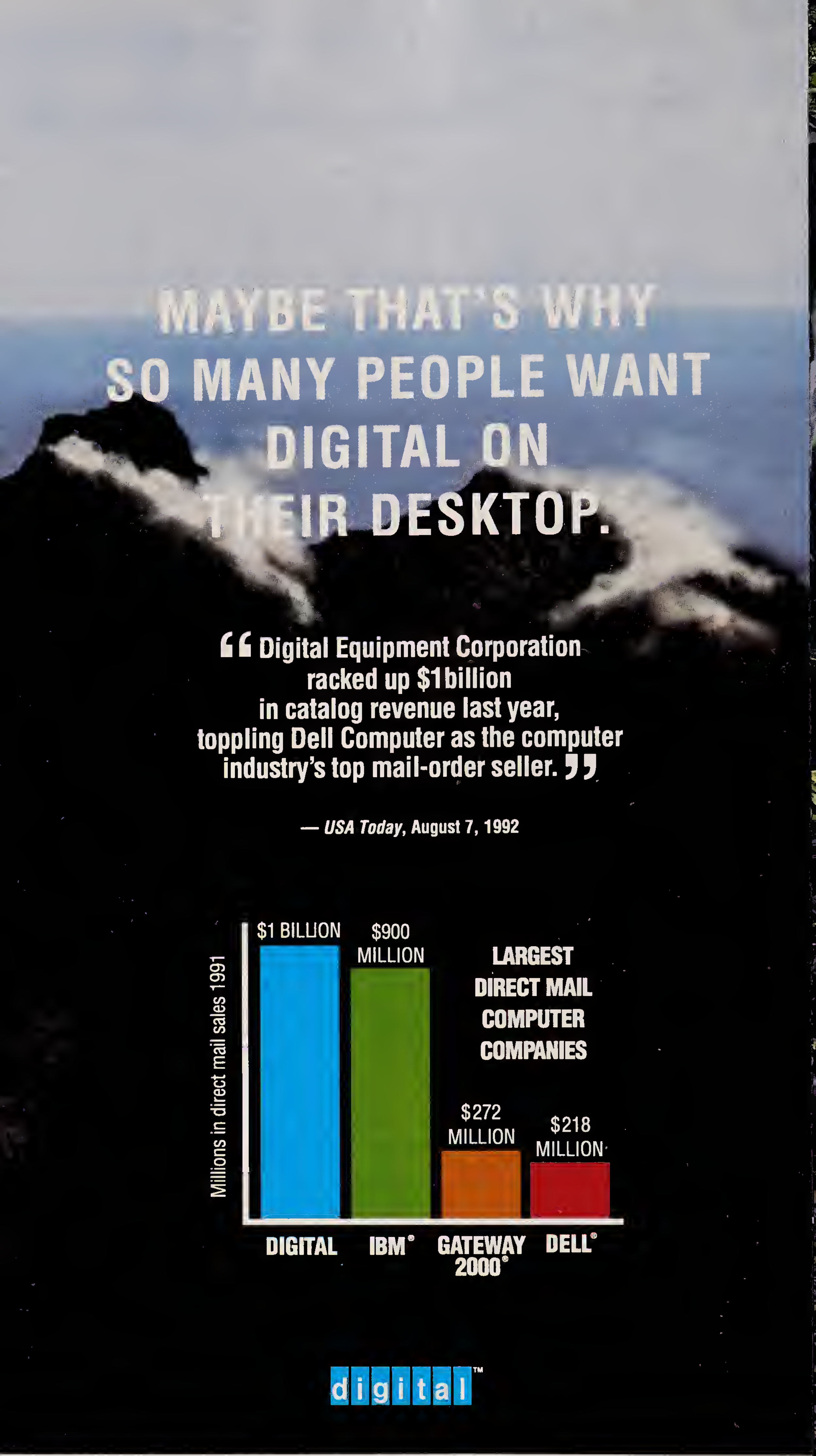

“Digital Equipment Corporation racked up $1billion in catalog revenue last year, toppling Dell Computer as the computer industry's top mail-order seller.”

— *USA Today*, August 7, 1992

DECpc 433dx LP
i486DX 33MHz System
- 128KB Cache • 4MB RAM
- 122MB Hard Drive
- 14" Low Emission SVGA Non-interlaced Monitor (supports up to 1024 X 768)
- 3.5" 1.44MB Floppy Drive
- Keyboard and Mouse
- MS-DOS 5.0 & Windows 3.1

$2,299
Call for availability!

An integration strategy only Digital can deliver. "Experience in networking" are three words most commonly associated with Digital. That's because our passion for integration never allowed us to settle for mere compatibility.

Which is why when it comes to developing solutions for making the right information available to the right people at the right time in the most useful form — regardless of geography, hardware or software — Digital should be your first choice.

And with Digital, you don't have to pay for solutions you may never need. We can customize our services to your environment and your needs.

No matter how complex— or how simple.

"I think they're a winner."

— Andrew Seybold, Editor-in-Chief
The Outlook on Professional Computing
August 24, 1992

Even if Digital doesn't manufacture it, our service makes it work. Take these three basic examples of Digital's integrated service thinking:

Our Multi-vendor Service Plan gives you expert coverage for more than 8,000 hardware and software products from 800 different manufacturers.

Our Hardware Service Plan puts the expertise of more than 40,000 technical experts worldwide at your fingertips — whether you're using Apple®, IBM®, COMPAQ®, (or Digital), to name a *very* few of the vendors it covers.

Our Software Support for more than 100 popular applications from Microsoft®, Banyan™, Ashton-Tate™, Novell® and many others — thanks to our alliances.

To order or for more information, call.

Don't forget to ask about our complete line of printers, software, accessories and peripherals–and our special offer on Lotus® software!

DesktopDirect FROM Digital

1-800 PC BY DEC
(1-800-722-9332)

Please reference AXT when you call.
Monday-Friday, 8:30 am to 8:00 pm (ET).

digital™

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EVERYTHING WORKS TOGETHER. AND WE MEAN EVERYTHING.

"Network Certified by Digital." More than a seal of approval. It's a statement of fact. Pure and simple. It's what separates Digital from the crowd.

Even today, when most companies are building products that can connect, Digital builds to a higher standard: *Integration.* The only standard that saves *you* from unhappy users and lost time and money when your LAN goes down.

> "...Digital had the combination of engineering expertise, experience in systems integration, and worldwide quality control standards that we were looking for. Equally important was the assurance Digital could give us on maintenance. We can't risk anything going wrong in the middle of a trading session."
>
> — Richard Heckinger, Hong Kong Stock Exchange

In these headline making days of PC company cost-cutting maneuvers and substandard components, only Digital continues to have the technology, alliances and commitment to guarantee integration in today's complex multi-vendor environments — and tomorrow's .

Some people tell us we're too obsessed with integration. Too much the engineers. So be it. At Digital we still believe in taking the heat — so you'll never have to.

NETWORK CERTIFIED DIGITAL

DECpc 333sx LP
i386SX 33MHz System
- 64KB Cache • 4MB RAM
- 122MB Hard Drive
- 14" VGA Color Monitor
- 3.5" 1.44MB Floppy Drive
- Keyboard and Mouse
- MS-DOS 5.0 & Windows 3.1

$1,549

We take the heat. So you'll never have to.

In the real world not everyone calls Digital for *all* their desktop product needs (yet). We recognize you buy servers from here, math coprocessors from there and entirely somebody else's PCs–somewhere else.

Which is why we built our own labs to test interconnectivity back in 1985. Since then, every Digital desktop product is network tested with every other industry standard machine available, from IBM PS/2® and OS/2® to COMPAQ®, Sun Workstations® and Macintosh®. We operate a 70,000+ node network that runs our company–and tests our PCs. We even test applications between different networking configurations.

In fact, Digital's networking lab is so highly regarded in the industry that other manufacturers now hire us to network test *their* PCs and printers.

Every Digital PC Includes:

- Factory Installed MS-DOS 5.0 & Windows 3.1
- 30-Day Money Back Guarantee
- One Year On-Site Service (Return-To-Factory Service only for Notebooks)
- Leasing Now Available
- 24-hour FAX Support
- Free Shipping

Nobody builds PCs better. No PC can network effortlessly unless it can distinguish itself as an incredible standalone.

Which is why Digital uses the *best* technology available. Like *high-volume data highways* to keep microprocessors up to speed. *Writeback cache* instead of standard cache (Writeback is the most advanced memory-catching strategy in the industry). *Built-in GUI accelerators* to make Windows™ run at speeds four times that of standard VGA. And VRAM instead of DRAM in our new upgradables for speeding up video and minimizing bottlenecks.

NETWORK CERTIFIED DIGITAL

DECpc 425sx LP
i486SX 25MHz System
- 4MB RAM
- 122MB Hard Drive
- VGA Color Monitor (14", 0.29mm)
- 3.5" 1.44MB Floppy Drive
- Keyboard and Mouse
- MS-DOS 5.0 & Windows 3.1
- Fully Upgradable

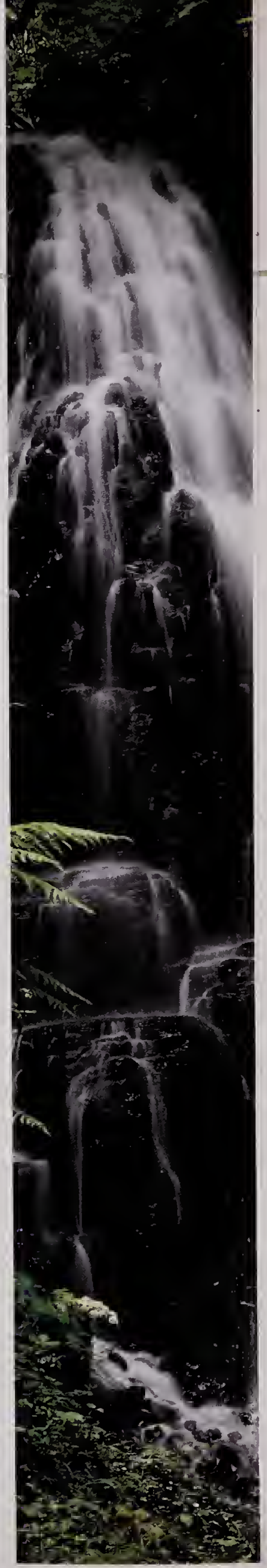
$1,999

Monitor may differ from that shown

PC WEEK

> "DECPC BESTS LOW-COST 486DX FIELD. PERFORMANCE, EXPANDABILITY AND DESIGN STAND OUT... Digital Equipment Corp.'s system the overall winner in PC Week Labs tests..."
>
> — *PC Week*, October 5, 1992

We've even got another advantage built in. *How* we build our PCs. Because Digital is one of only a handful of companies in the world to build *PCs in an ISO 9000 compliant factory.*



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Call for availability!

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Our Hardware Service Plan puts the expertise of more than 40,000 technical experts worldwide at your fingertips — whether you're using Apple®, IBM®, COMPAQ®, (or Digital), to name a *very* few of the vendors it covers.

Our Software Support for more than 100 popular applications from Microsoft®, Banyan™, Ashton-Tate™, Novell® and many others — thanks to our alliances.

To order or for more information, call.

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One more word about networking from the people who made it happen.

PATHWORKS™: What makes PATHWORKS the last word in networking? Choice, for one thing. Other networking operating system vendors say they offer "choice." They do —as long as it's theirs. But no one matches PATHWORKS choice of servers, clients and even security. PATHWORKS works wherever *and* with almost whatever PCs, servers, network operating systems, local and wide area network applications you're using. PATHWORKS brings them *all* together — seamlessly. Making growth in an integrated environment not just painless but *possible.*

PATHWORKS also works on a few other tough problems better than *they do* including:
- Security
- Network Management
- Access to Data at the Source
- Enabling True Peer-to-Peer Networking.

Our network *service* is just as flexible and distinctive. From installation of a single package to a single point of contact for a global multi-vendor environment.

It's just another advantage of dealing with a company that has 40,000 technical experts worldwide: DIGITAL.

> **"Ben & Jerry's networks its PCs via DEC PATHWORKS... We're happy with our architecture. It meets our current needs and can expand to meet future ones."**
>
> — *LAN Magazine*, March 1992

NEW!

Point and go with Vivace™ for Windows.

Digital has a solution for anyone who has ever had to go searching through long forgotten subdirectories to find a missing file: Vivace.

Vivace lets you control desktop services, documents and folders via a graphical interface that puts the focus on how *you* work — instead of how the computer works. You can organize by task, by customer, by anything.

Vivace frees you from the tyranny of directories, subdirectories and sub-sub-directories. Just point your mouse and go — right to what you need.

To order Vivace, or for more information, call our Technical Consultants at 1 800 DIGITAL. Ask for our special limited time offer of 30% off list price!

List Price: $145. **Now: $102**

DECPCI Forum on CompuServe®!

Now, access DECPCI Forum on CompuServe for answers, announcements, tech tips and more for any Digital PC or PC integration product.

It's available 24 hours a day, 7 days a week for configuration recommendations, interoperability information, up-to-date information on known bugs, software drivers or downloadable software patches. Just enter GO DECPCI at the ! prompt.

Special notice to our Government customers.

For current prices, technical support and order placement for the new GSA-BC Schedule just call: 1 800 DIGITAL. Ask for the Government Contract Group and reference GSA Contract Number GSOOK92AGS6158.

For networking products, pre-order information, call. Press option 2.

1 800 DIGITAL

Please reference AXT when you call Monday to Friday 8:30 AM To 8:00 PM (ET).

DECdirec

AT&T announces line of ersonal communicators

BY ELLIS BOOKER
CW STAFF

ANTA CLARA, Calif. — Bilbo aggins could have used one on is adventures in Middle Earth: a ny, lightweight gadget able to xchange voice, fax and electron- mail.

AT&T Microelectronics re- ently announced the first of its obbit processors, a family of igh-speed, low-power micropro- essors targeted at pen-based, obile devices — what AT&T alls “personal communicators.”

According to Dean McCar- on, an analyst at In-Stat, Inc., a arket research firm in Scotts- ale, Ariz., AT&T's interest in the andheld/personal digital assis- ant market is matched by Intel orp., VLSI Technology, Inc., Va- em and Chips and Technol- gies, Inc.

“It's fair to assume that every ajor semiconductor company is oing to go after this market,” cCarron said. He estimated hat within five years, 20 million f these devices — using either hip sets or highly integrated sin- le chips — will be sold annually. In 10 years, In-Stat predicted, 70 million of these systems will be sold annually.

The first Hobbit chip, the ATT92010, operates at 3.3V and achieves a performance level of 13.5 VAX million instructions per second (MIPS), AT&T said. This performance reportedly works out to 37 VAX MIPS per watt.

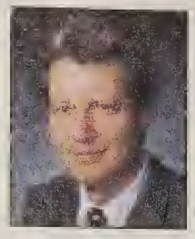
The Hobbit will be shown this month at Comdex/Fall '92, where AT&T promises to have several equipment manufacturers who will voice support for the new line. To date, only EO, Inc. in Mountain View, Calif., has publicly announced that it plans to use the AT&T chip set in a future pen-based system.

Other members of the Hobbit family include a system and power management controller for all devices in the chip set, a Personal Computer Memory Card International Association controller for memory and I/O and a peripheral controller and a display controller supporting both LCD and CRT-type displays. The Hobbit CPU costs $35 in quantities of 10,000, with the chip set costing less than $100, AT&T said.

WINDOWS VIEW

Jesse Berst

The Quiche Factor



We work in a very technical profession. Yet many decisions are still based on emotion.

Consider Microsoft's Visual Basic. By any measure, Visual Basic earns a spot on the list of serious corporate development tools. In many cases, however, Visual Basic isn't considered because of the emotional baggage it carries.

I call this the Quiche Factor, after the book *Real Men Don't Eat Quiche*. In this case, however, the phrase is “Real programmers don't use Basic.” (Yes, I know there are many fine women programmers. But you get the point.)

The Quiche Factor certainly hampered Walt Wikman, director of global delivery technology at A. C. Nielsen, the market research firm. Wikman is a fan of Visual Basic as a corporate development tool. “The toughest thing we've had to overcome with Visual Basic is the perception that it's not for real programmers,” Wikman said. “People who've spent time learning C don't think a switch to Basic is a career-enhancing move.”

That's too bad, because Wikman believes Visual Basic is “great for small, targeted apps.” His firm has built an “engine” in C called the Nielsen Workstation. His programmers use Visual Basic to build applets on top of the engine, tailored to clients' special needs. Visual Basic fits their requirements “like a glove” because of its ability to create reusable custom controls.

I first woke up to the value of Visual Basic when I was a judge at the Windows World Open, *Computerworld*'s Custom Applications Contest. Many of the finalists built their applications in whole or in part with Visual Basic, leading me to conclude it was more than a hobbyist's tool.

Now is a good time to take another look at Visual Basic because Microsoft has just released Version 2.0. This new release comes in two flavors: the $199 standard edition and the $495 professional edition.

Microsoft has enhanced Visual Basic to answer the leading requests from customers. I visited the Visual Basic team recently and saw tapes of the focus groups they conducted. Here are a few of the things Microsoft added after listening to users:

- New debugging tools.
- Improved interface and a handy Tool Bar.
- Better support for development teams and third-party CASE tools.
- Improved performance. “We took a reasonably sized app and converted it to Version 2.0 in about a half hour,” Wikman said. “We didn't do anything else and we got it to run about 30% faster immediately.”

The professional edition has been further enhanced with IS needs in mind, including additional tools for workgroup and database access applications.

What's the verdict on Version 2.0? Based on his work with the beta-test version, Wikman said he is pleased. “It's not as powerful as the C environment,” he cautioned. “If you're a commercial developer who wants to build a spreadsheet, you wouldn't use Visual Basic. But it's a great way to prototype or to put small apps together in a hurry because it's so easy to use.”

What about the Quiche Factor? Wikman said he solved it by making his people compete against nonprogrammers. “If a nonprogrammer using Visual Basic could put together an app faster than the professionals, then it obviously meant that they needed to take a look.”

Most in-house development shops should give Visual Basic a look. In addition to the reasons cited above, the Basic language appears to have an important future. Access, the soon-to-be-released database from Microsoft, uses Basic as its programming language. What's more, Microsoft is building a new “Object Basic” that will appear in all of its products and will also allow you to create cross-application solutions — that is, to create custom solutions with Windows products as the building blocks and Object Basic as the glue.

I'm not saying every in-house developer needs Visual Basic. But I am suggesting it deserves serious consideration for corporate development projects. Letting programmers ignore Visual Basic because of the Quiche Factor is a half-baked idea.

Berst is the publisher of Redmond, Wash.-based “Windows Watcher” newsletter, a monthly briefing service for software executives and corporate technology managers.

NEW PRODUCTS

oftware

ilot Software, Inc. has started hipping Version 3.2 of Light- hip. The product is a PC version f the company's visual informa- on access system and runs un- er Microsoft Corp.'s Windows.

According to the company, ightShip 3.2 includes a more owerful and simplified menuing nvironment for building and im- lementing pull-down and cas- ading menus. Objects can be amed on the systems screen, al- owing them to locate and group elated objects.

LightShip 3.2 costs $19,000.

ilot Software
0 Broad St.
oston, Mass. 02109
617) 350-7035

ystems

Altima Systems, Inc. has introduced the Altima 325XL and the Altima 325SL notebook computers.

According to the company, the Altima 325XL is powered by Intel Corp.'s 80386SXL processor; the 325SL uses the Intel 80386SL chip. The 325SL offers advanced power management and 64K cache memory. Both models include 25-MHz speed, 2M bytes of random-access memory expandable to 4M or 6M bytes, a 3½-in., 1.44M-byte internal floppy disk drive and an 80M-byte hard drive.

The 325XL costs $2,399, and the 325SL costs $2,699.

Altima Systems
Suite 1050
1390 Willow Pass Road
Concord, Calif. 94520
(510) 356-5600

Sigma Designs, Inc. has introduced WinStorm, a Microsoft Corp. Windows-based video accelerator board.

WinStorm offers True Color video and 16-bit CD-quality sound. According to the company, the product includes interfaces for high-performance Small Computer Systems Interface CD-ROM, full duplex Musical Instrument Digital Interface, an internal 20-voice stereo synthesizer, several popular multimedia applications, standard IBM joystick and Sigma Designs' proprietary MultiMode Control Panel software.

The WinStorm multimedia display adapter comes with 1M byte of memory and costs $429.

Sigma Designs
47900 Bayside Pkwy.
Fremont, Calif. 94538
(510) 770-0100

Macintosh products

Virginia Systems, Inc. has introduced Version 1.0 of Sonar Image, a document imaging system designed for the Apple Computer, Inc. Macintosh.

Users can scan items such as letters, articles, depositions and briefs and recover the scanned documents at a future time, the company reported. An automatic optical character recognition feature enables users to search for anything in the scanned documents.

Users can then view or print the original image of the page or the recognized text in the document. Sonar Image provides a choice of three image resolutions, support for a variety of scanners, simple image input and an enhanced retrieval system.

The single-user price for Sonar Image is $2,195.

Virginia Systems
5509 West Bay Court
Midlothian, Va. 23112
(804) 739-3200

Peripherals

Dataproducts Corp. has introduced Jolt PS, a solid ink color printer.

The product incorporates Adobe Systems, Inc.'s PostScript Level 2 page description language and has a throughput rate of 2 page/min. for text.

According to the company, Jolt PS uses a Dataproducts engine and has a 24-MHz Weitek 8220 processor. A Small Computer Systems Interface port for hard drive connection is included, along with concurrent Apple Computer, Inc. AppleTalk/LocalTalk and RS-232 serial interface ports as a standard configuration.

Jolt PS costs $6,695.

Dataproducts
6219 De Soto Ave.
Woodland Hills, Calif. 91365
(818) 887-8000

Digital Equipment Corp. has announced the DEClaser 1152 desktop laser printer.

Standard interfaces are included that attach directly to Apple Computer, Inc. Macintosh and PC systems, or the printer can be configured in LAT networks, the company reported.

The 4 page/min. printer also includes Hewlett-Packard Co. LaserJet II and Adobe Systems, Inc.'s PostScript Level 2 protocols, 17 scalable PostScript fonts and parallel, serial and AppleTalk ports.

The DEClaser 1152 laser printer has 300 by 300 dot/in. resolution, a 6,000 page/month duty cycle and the ability to print on a variety of items, including envelopes and transparencies.

The introductory price for the product is $999.

DEC
146 Main St.
Maynard, Mass. 01754
(508) 493-5111

Software application packages

SalesLink Systems has announced Version 1.2 of SalesLink for Windows.

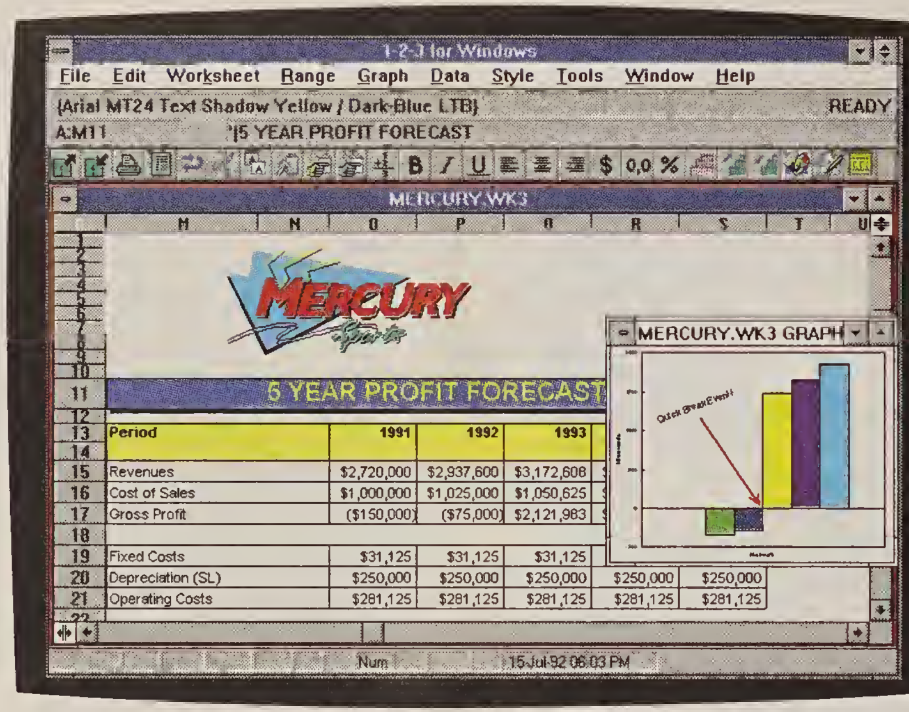
The product is a sales force automation software that has compliance with Microsoft Corp. Windows for Pen Computing.

According to the company, SalesLink for Windows incorporates an enhanced personal-information-management module that includes an agent capability designed to automate various tasks.

SalesLink for Windows costs $895 per user.

SalesLink Systems
1840 Oak Ave.
Evanston, Ill. 60201
(708) 866-0400

Compared to Lo
Microsoft Office look

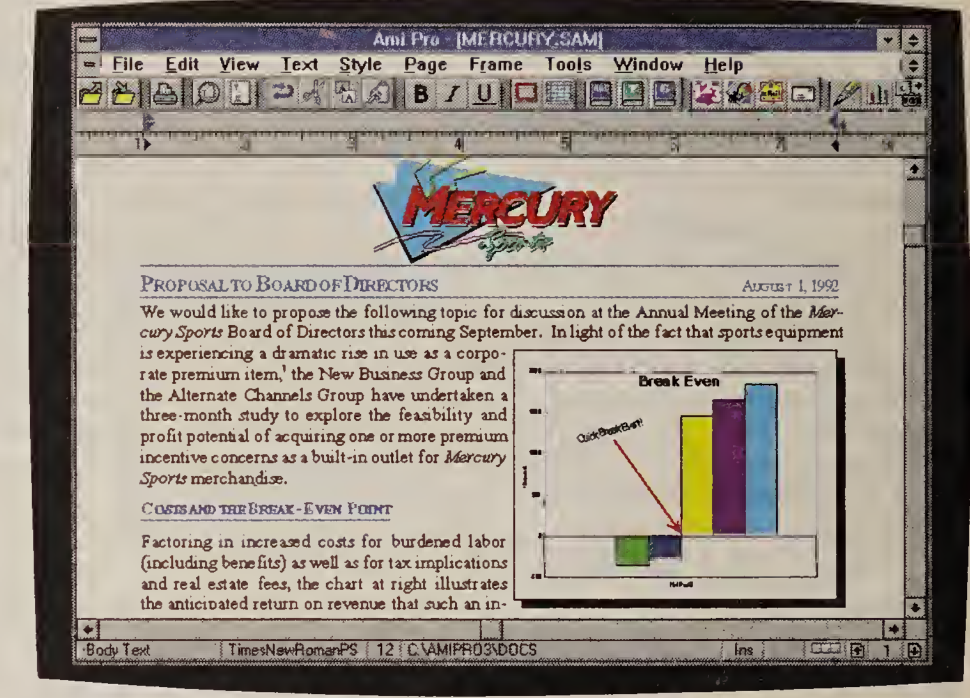

1-2-3 for Windows
File Edit Worksheet Range Graph Data Style Tools Window Help
{Arial MT24 Text Shadow Yellow / Dark-Blue LTB} READY
A:M11 '|5 YEAR PROFIT FORECAST
MERCURY.WK3

MERCURY Sports

5 YEAR PROFIT FORECAST

Period	1991	1992	1993		
Revenues	$2,720,000	$2,937,600	$3,172,608		
Cost of Sales	$1,000,000	$1,025,000	$1,050,625		
Gross Profit	($150,000)	($75,000)	$2,121,983		
Fixed Costs	$31,125	$31,125	$31,125		
Depreciation (SL)	$250,000	$250,000	$250,000	$250,000	$250,000
Operating Costs	$281,125	$281,125	$281,125	$281,125	$281,125

1-2-3 for Windows Release 1.1 now includes over 25 new features and usability enhancements.


Ami Pro - [MERCURY.SAM]

MERCURY Sports

PROPOSAL TO BOARD OF DIRECTORS AUGUST 1, 1992

We would like to propose the following topic for discussion at the Annual Meeting of the *Mercury Sports* Board of Directors this coming September. In light of the fact that sports equipment is experiencing a dramatic rise in use as a corporate premium item,[1] the New Business Group and the Alternate Channels Group have undertaken a three-month study to explore the feasibility and profit potential of acquiring one or more premium incentive concerns as a built-in outlet for *Mercury Sports* merchandise.

COSTS AND THE BREAK-EVEN POINT

Factoring in increased costs for burdened labor (including benefits) as well as for tax implications and real estate fees, the chart at right illustrates the anticipated return on revenue that such an in-

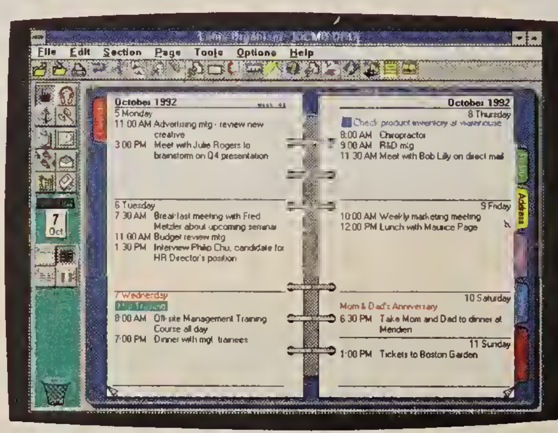
Ami Pro 3.0 includes new features that make it more powerful and easier to use than Microsoft Word for Windows.

It's true. When you evaluate our complete solution for Windows™ desktops and then look at theirs, you'll see why ours is a better business choice.

Of course, both SmartSuite™ and Microsoft® Office include full-featured products. But SmartSuite has been recently updated to include 1-2-3® for Windows Release 1.1 with SmartPak™ and the newly released Ami Pro® 3.0, as well as Freelance Graphics® and cc:Mail.™

All four of these award-winning products share a common interface as well as our innovative SmartIcons.™ So when you've learned one, you've learned them all.

What's more, SmartSuite delivers some truly unique integration capabilities that aren't possible with Office. All four SmartSuite products, for example, share data, text and graphs between each application smoothly and seamlessly. So when an outline produced in Ami Pro is imported to Freelance Graphics, it's automatically converted into a Freelance Graphics outline and full-slide presentation. And a 1-2-3 graph exported to Freelance Graphics will arrive, fully editable. Not so with Excel and PowerPoint.® You can even move



October 1992
5 Monday
11:00 AM Advertising mtg - review new creative
3:00 PM Meet with Julie Rogers to brainstorm on Q4 presentation

6 Tuesday
7:30 AM Breakfast meeting with Fred Metzler about upcoming seminar
11:00 AM Budget review mtg
1:30 PM Interview Philip Chu, candidate for HR Director's position

7 Wednesday
8:00 AM Off-site Management Training Course all day
7:00 PM Dinner with mgt. trainees

October 1992
8 Thursday
Check product inventory at warehouse
8:00 AM Chiropractor
9:00 AM R&D mtg
11:30 AM Meet with Bob Lily on direct mail

9 Friday
10:00 AM Weekly marketing meeting
12:00 PM Lunch with Maurice Page

10 Saturday
Mom & Dad's Anniversary
6:30 PM Take Mom and Dad to dinner at Menden

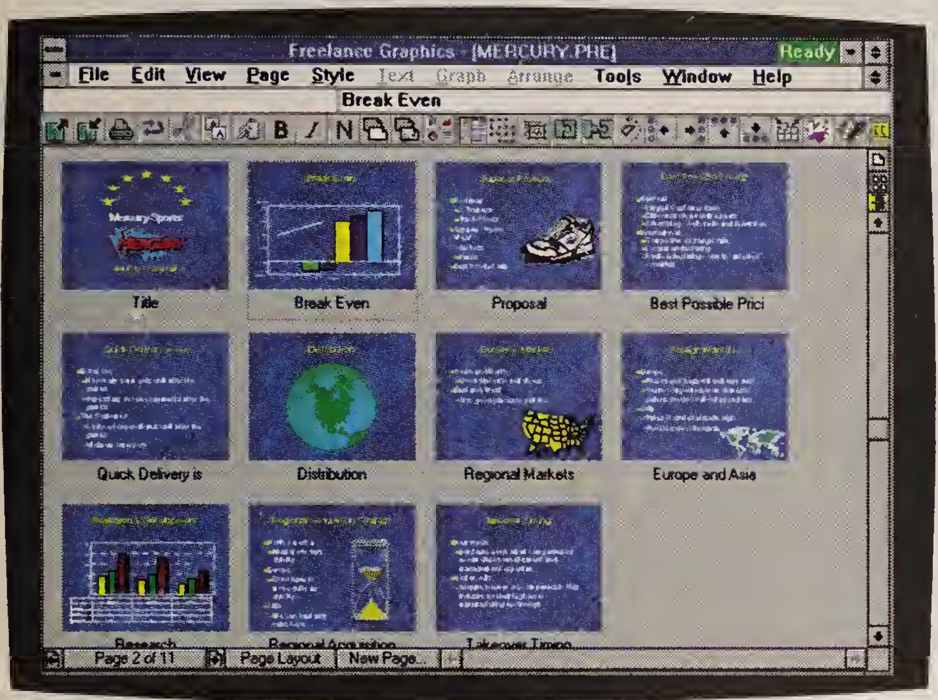
11 Sunday
1:00 PM Tickets to Boston Garden

For a limited time, SmartSuite includes Lotus Organizer, the computerized way to keep tabs on all your daily tasks.

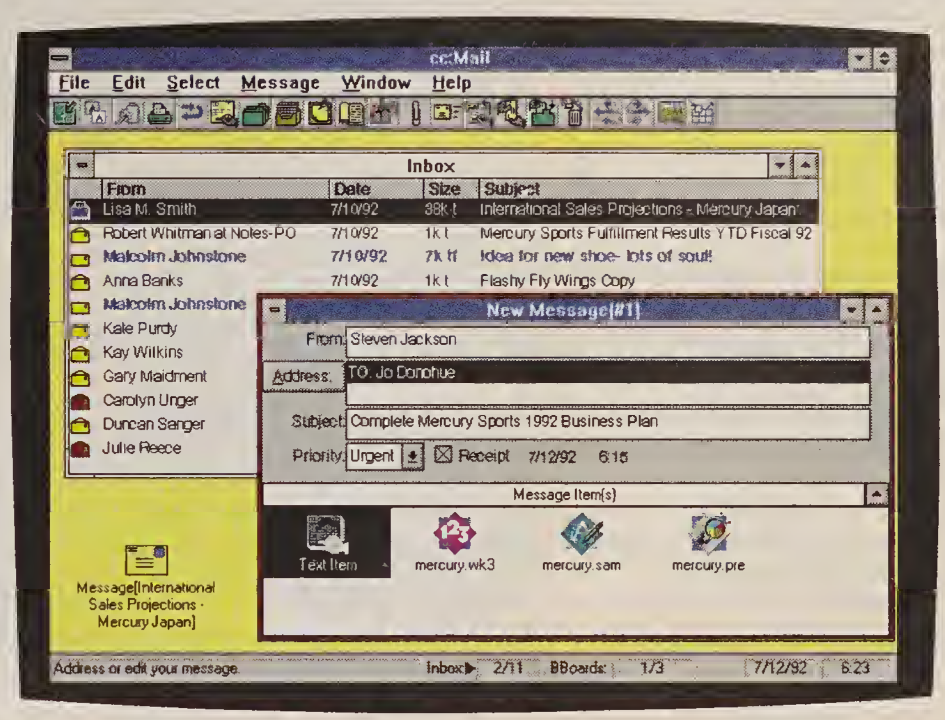
---

*Offer expires 12/31/92 or while supplies last. **Suggested retail value. ***In Canada, call **1-800-GO-LOTUS.** When you purchase 10 SmartSuite packages, you'll get a free cc:Mail for Windows Platform Pack (a $495 valu
SmartMasters and Working Together are trademarks of Lotus Development Corporation. cc:Mail is a trademark of cc:Mail, Incorporated, a who

tus SmartSuite, s more like a cubicle.



Award-winning Freelance Graphics is the easiest, fastest way to create a stunning presentation.



From	Date	Size	Subject
Lisa M. Smith	7/10/92	38k	International Sales Projections - Mercury Japan
Robert Whitman at Notes-PO	7/10/92	1k	Mercury Sports Fulfillment Results YTD Fiscal 92
Malcolm Johnstone	7/10/92	7k	Idea for new shoe- lots of soul!
Anna Banks	7/10/92	1k	Flashy Fly Wings Copy
Malcolm Johnstone			
Kale Purdy			
Kay Wilkins			
Gary Maidment			
Carolyn Unger			
Duncan Sanger			
Julie Reece			

From: Steven Jackson
Address: TO: Jo Donohue
Subject: Complete Mercury Sports 1992 Business Plan
Priority: Urgent ☒ Receipt 7/12/92 6:15

Address or edit your message. Inbox▶ 2/11 BBoards: 1/3 7/12/92 6:23

cc:Mail, the world's leading LAN-based e-mail system, allows you to send documents across all major networks and computing platforms.

quickly between SmartSuite applications just by clicking the icon of the application you want to open.

Better still, all SmartSuite applications are mail-enabled. So you can use cc:Mail to send "live" documents from within each application. Office, on the other hand, requires you to install and use an optional macro with Microsoft Mail 3.0.

Why is now the best time to buy Lotus SmartSuite instead of Microsoft Office?

For one thing, you just can't beat the total value. In fact, for a limited time,* **when you buy SmartSuite, we'll give you Lotus Organizer™ (a $149 value**) absolutely free.** It includes an on-screen calendar, to-do list, planner, address book, notepad and anniversary reminder that are all fully integrated. Plus if you're upgrading from any version of 1-2-3, Symphony,* any Lotus word processor or graphics product, or cc:Mail, you'll save even more. So do the smart thing. Visit your Lotus Authorized Reseller or call **1-800-872-3387, ext. 7165***** for a free demo disk.

Lotus **SmartSuite for Windows**

1-2-3, Ami Pro, Freelance Graphics, and cc:Mail

To find out more about Lotus and Working Together™ in Windows, visit Booth #2842 at Comdex.

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Gateway's Nomads: Powerful, well-keyed

Technology Analysis — A roundup of expert opinions about new products. Summaries written by new products writer Lisa Davidson.

The Gateway 2000, Inc. Nomad series has three monochrome notebooks: an entry-level system based on Advanced Micro Devices, Inc.'s 25-MHz AM386SXL chip and higher end models based on Intel Corp.'s 20-MHz I486SX and 25-MHz I486DX processors. Reviewers raved about Nomad's power supply but were not too keen on its construction.

Performance: The machines cranked out high scores through processing and memory tests. However, all three lagged behind the competition in video performance.

Ease of use: Ergonomically correct, the Nomad keys were described by reviewers as both crisp and pleasingly responsive.

Power supply: The 425DXL model lasted just over four hours; other models lasted about three hours.

Design: Reviewers said one minor drawback was Nomad's flimsy case contruction. Under normal use, its plastic doors and ports bent easily.

Service and support: Toll-free technical support and one-year parts-and-labor warranty are offered.

Overall value: Prices start at $2,095 for the 325SXL model with an 80M-byte hard drive.

Gateway 2000 Nomad

Reviews	Performance	Ease of use	Power supply	Design	Service and support	Overall value
PC Magazine 8/92	Quality performance	Disappointing keyboard	Excellent battery life	Flimsy construction	Toll-free support	Highly competitive price
PC Computing 9/92	Cranked through processing tests	Large, high-contrast screen	Impressive	5.8 pounds	Outstanding support	Outstanding
PC Week 5/18/92	Excellent performance	Keyboard layout suffers	2.5 hours	Sleek	NC	Surprisingly low price
PC Sources 9/92	Enough power for any task	Great typing feel; fine video	Up to 6 hours	Manufactured by Texas Instruments	Typical support policies	Uncompromising power
Users						
Bruce Choate, The Goodyear Tire and Rubber Co.	▪▪▪▪	▪▪▪	▪▪▪▪	▪▪▪	▪▪▪▪	Very good value
Bill Cecil, St. Luke's Hospital of Kansas City	▪▪▪▪	▪▪▪▪	▪▪▪▪	▪▪▪	▪▪▪▪	Tremendous value
Analysts						
Chris Vasko, BIS Strategic Decisions	▪▪▪▪	▪▪▪	▪▪▪	▪▪	▪▪	Has a lot of power
Margaret Jacobs, Datapro Information Services Group	▪▪▪▪	▪▪▪	▪▪▪	▪▪▪▪	▪▪▪▪	Many extra features
Mark Hanson, Bostek, Inc.	▪▪▪	▪▪▪	▪	▪▪▪▪	▪▪▪▪	Next generation more usable

Key: ▪▪▪▪ Very good ▪▪▪ Good ▪▪ Fair ▪ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor background information

Gateway 2000 reported revenue of $249 million for the quarter ended June 30, a 5% increase over the previous quarter. "They aren't growing as fast as they have been, but they're doing well," said Bruce Stephens, an analyst at International Data Corp. "Let's say they've reached a cruising altitude."

Gateway responds

Mike Schmith, marketing manager:

Ease of use: We have actually found that having the shorter key travel allows some users to type faster. The lack of dedicated Ctrl keys is actually a blessing in disguise. By having to hit two keys, we avoid hitting the Pg Dn key instead of the Enter key.

Design: This product stands up very well. We are currently looking at a redesign on the port doors.

Compaq's LTE Lite/25 works fast, long

Compaq Computer Corp.'s LTE Lite/25 surpasses its competition in performance. Until recently, it was priced on the high end; however, Compaq's recent price cuts of more than $1,000 now make the LTE an attractive buy.

Performance: Based on Intel Corp.'s 25-MHz 80386SL chip, the LTE Lite/25 boasts enhanced processing speed — it is 19% faster than its 20-MHz Intel 386SX-based sibling.

Ease of use: Reviewers noted the notebook's undersized function keys. However, the keyboard possesses a short stroke and has the added benefit of an inverted T cursor key layout, which was not the case in some earlier Compaq notebooks.

Power supply: The nickel hydride battery lasted 2 hours, 17 minutes in battery rundown tests. That score increased to 3 hours, 26 minutes when power conservation was enabled. However, *PC Magazine* noted that battery performance has been compromised for a lower weight.

Design: The 6-pound LTE Lite/25's dimensions are 8½-by 11-by 1¾-in.

Service and support: On-site service and support are provided for one year. Service policies include a one-year warranty and toll-free support from 7 a.m. to 7 p.m. Central time.

Overall value: LTE Lite prices start at $2,799. Users will have to decide whether it is worth its weight.

Compaq LTE Lite/25

Reviews	Performance	Ease of use	Power supply	Design	Service and support	Overall value
PC Magazine 8/92	Among the fastest	Sharp, crisp edge-lit screen	2 hours, 17 minutes	Up to 10M bytes of memory	Toll-free support added	Compaq quality, Compaq price
Infoworld 4/20/92	Excellent	Very good keyboard	Excellent; more than 4 hours	Well-designed	Good	Fine expandability
PC Computing 5/92	Seared through video tests	16 levels of gray in VGA	Revamped power management	NC	NC	Great news
Users						
Robert Brock, Rails Inn	▪▪▪▪	▪▪▪	▪▪▪	▪▪▪▪	▪▪▪▪	Extremely good value
Glen Williams, Dunn Construction	▪▪▪	▪▪▪▪	▪▪▪▪	▪▪▪▪	▪▪▪▪	Works great
Dennis Therieault, United Technologies Corp.	▪▪▪▪	▪▪▪▪	▪▪▪▪	▪▪▪▪	NC	Very, very versatile
Analysts						
Chris Vasko, BIS Strategic Decisions	▪▪▪	▪▪▪▪	▪▪▪	▪▪▪▪	▪▪▪	It gets better and better
Margaret Jacobs, Datapro Information Services Group	▪▪▪▪	▪▪▪▪	▪▪▪▪	▪▪▪▪	▪▪▪	Very good power management
Mark Hanson, Bostek, Inc.	▪▪▪▪	▪▪▪▪	▪▪▪	▪▪▪	▪▪▪	Could improve disk storage and pricing

Key: ▪▪▪▪ Very good ▪▪▪ Good ▪▪ Fair ▪ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor background information

Compaq reported record revenue of $1.1 billion and profits of $49 million for the quarter ended Sept. 30. Revenue was up 50% over the comparable 1991 quarter when the company recorded a $70 million loss.

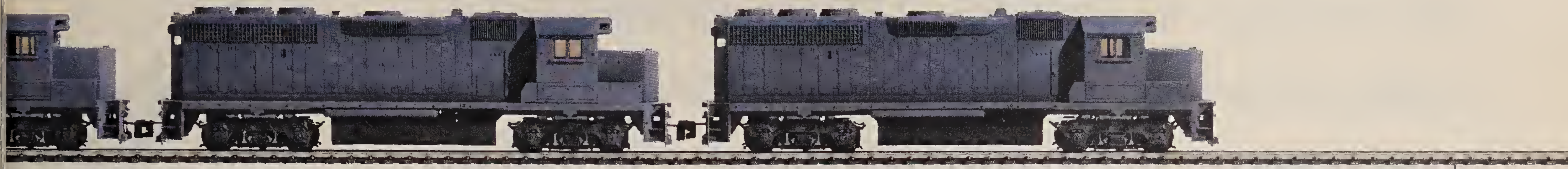
Compaq responds

Andrew Watson, director of portables marketing:

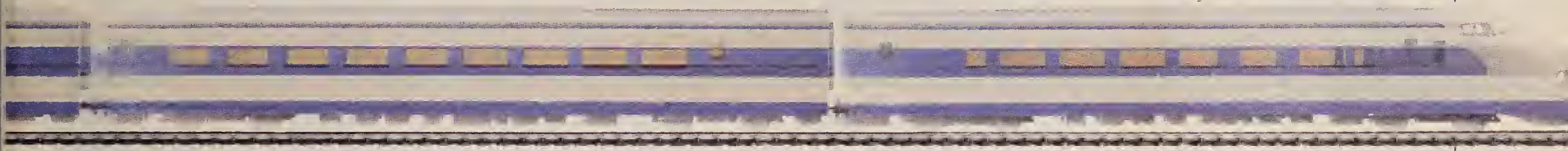
Performance: Compaq has not compromised battery life. We have included extremely powerful conservation features that are disabled during the reviewers tests.

Ease of use: We focused our attention on making alphanumeric features compatible to the full-size keyboard on the desktop.

Why combine a number of SPARCstations,



when a network of HP workstations and X stations operates for less?



It just stands to reason. The more engines, the more cost. Not only in initial purchase price, but system administration, backups and OS updates. That's why more and more people are getting on board with an HP workstation/X station network. A powerful engine that carries plenty of passengers.

At Hewlett-Packard, we understand that not every situation requires a workstation. A network of our Series 700 workstations and 700/RX X stations can give users full PA-RISC workstation functionality and HP's industry-leading speed at a fraction of the cost of a Sun SPARCstation network. And as your operation grows, workstations can be upgraded and X stations easily added.

Whether you're in customer service, manufacturing, finance, engineering, or the hospitality industry, you'll enjoy the benefits of central system administration, low cost of ownership, and access to network-wide resources. And your HP solution isn't just a good investment to start with–it remains one for the long haul.

No wonder HP is recognized as the worldwide leading supplier of color X stations, and is delivering workstations with the highest performance.

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OpenLook scores highest in GUI satisfaction

BY DEREK SLATER
CW STAFF

Hearing all the talk of Microsoft Corp.'s Windows New Technology (NT), desktop system users might get the impression that powerful graphical user interfaces (GUI) have not yet hit the market and that they must wait until NT is finally delivered next year.

But there are already numerous choices among desktop GUIs that present end users with a visual desktop computing environment. The five market leaders on Intel Corp. and Unix workstation platforms are Intel PC-based IBM's OS/2, Microsoft's Windows and Desqview/386 from Quarterdeck Office Systems and Unix workstation-based Sun Microsystems, Inc.'s OpenLook and the Open Software Foundation's (OSF) Motif.

User ratings of these top GUIs established Sun's OpenLook interface with the highest overall satisfaction with a score of 76.8. The rating placed it ahead of OS/2 and Windows, which were in a virtual tie, scoring 73.5 and 73.1, respectively. The OSF's Motif trailed the pack with an overall score of 72.4. Quarterdeck's Desqview was not included in the overall ratings because of an insufficient response base.

Choosing among these interfaces also necessitates a choice of operating system. The Buyers' Scorecard criteria focus on GUI attributes but include some operating systems functions.

In the Unix arena, OpenLook runs exclusively on Sun workstations, while Motif supports hardware from a number of different vendors. (Motif can also be run on top of DOS and OS/2, although this is less common.)

OpenLook topped Motif in most ratings areas, and it earned higher ratings than either of the Intel PC-based products in categories such as local-area networking capability, performance (where its workstation platform may provide a speed advantage) and documentation.

Motif users gave it higher ratings in the area of compatibility with installed hardware and software; it also rated higher than OpenLook in ease of installation. The $1,000 price tag for Motif includes a tool kit, an application programming interface and a description language/compiler, allowing users to develop their own Motif applications.

Despite the closeness of the Windows and OS/2 overall scores, satisfaction ratings indicate differing strengths for the two products. OS/2 comfortably topped Windows in the area of multitasking; Windows enables DOS users to open several applications simultaneously and cut and paste between them, but it does not allow the user to simultaneously perform two computing tasks (a functionality promised for Windows NT).

OS/2 also earned higher ratings in service and support and in memory and file management. Both products are known for being fairly resource-intensive; OS/2 placed higher in performance. Windows, on the other hand, placed higher in ease of use and installation and in value for the dollar.

Buyers' Scorecard records users' satisfaction with their installed products. Users assigned 1-to-10 ratings based on their satisfaction with their GUIs in 12 specific categories. Users also rated the importance of each category. (See the methodology on the following page for a complete description of the scoring process.) •

Graphical user interfaces

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: 50 users for each product.

Total possible score **100** Mean score **74**

Product	Highest ratings	Lowest ratings
Unix-based GUIs		
Sun's OpenLook SCORE 76.8	Multitasking Local-area networking Value for the dollar	Ease of installation Memory management File management
OSF's Motif SCORE 72.4	Local-area networking Multitasking Ease of use	File management Memory management Utilities
Intel PC-based GUIs		
IBM's OS/2 SCORE 73.5	Multitasking Value for the dollar Vendor service and support	Ease of installation Documentation Utilities
Microsoft's Windows SCORE 73.1	Value for the dollar Ease of installation Ease of use	Multitasking File management Memory management

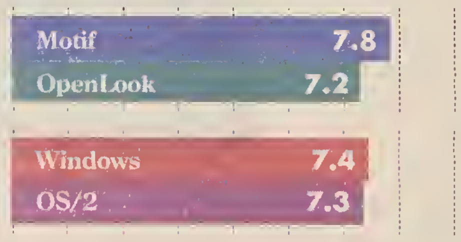
RATINGS IN ORDER OF IMPORTANCE

In the Unix comparison, Motif earns the highest score in compatibility, the area users rated as most crucial. However, OpenLook gets higher marks than Motif in the remaining key ratings categories. Windows tops OS/2 in most areas on Intel platforms but fares poorly in multitasking.

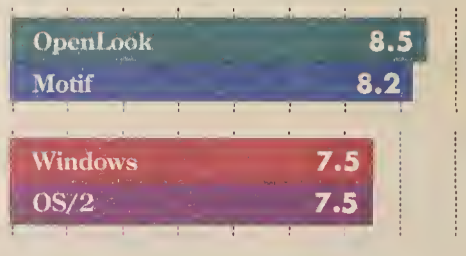
User importance rating:

(Additional ratings on next page)

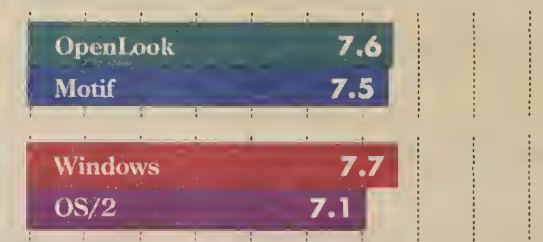
8.3 Compatibility



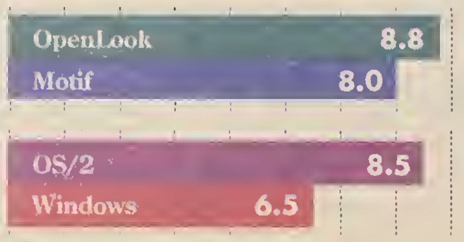
8.3 Local-area networking capabilities



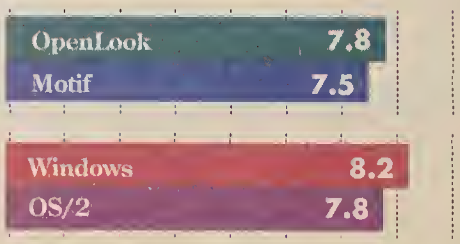
8.1 Ease of use



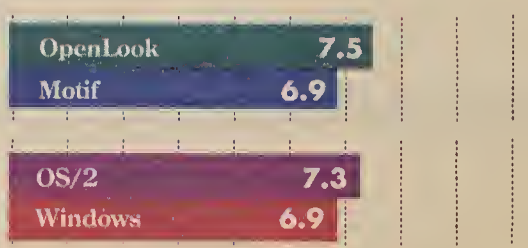
8.0 Multitasking



8.0 Value for the dollar



7.9 Performance

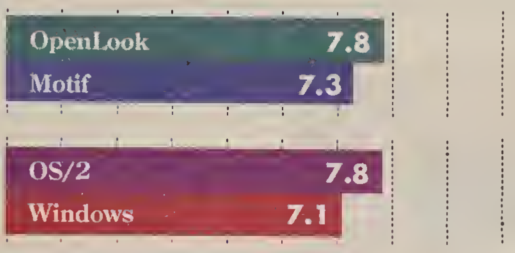


RATINGS IN ORDER OF IMPORTANCE

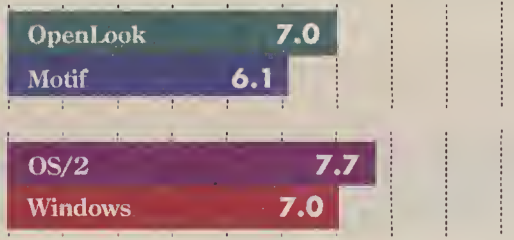
(Graphical user interfaces, continued from previous page)

OpenLook again passes Motif in most categories, with the exception of ease of installation. On the PC platform, OS/2 and Windows divide top honors in the remaining six areas.

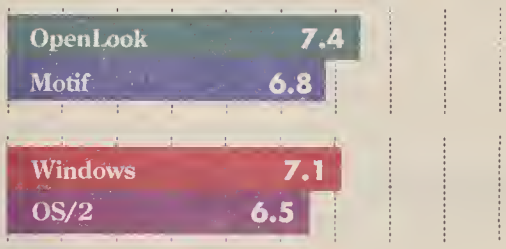
7.8 Vendor service and support



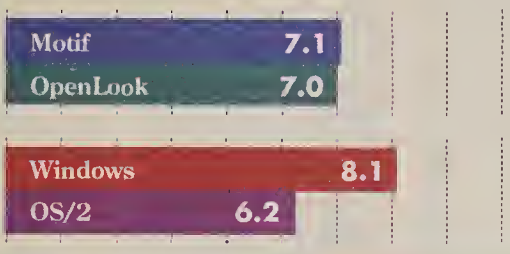
7.6 Memory management



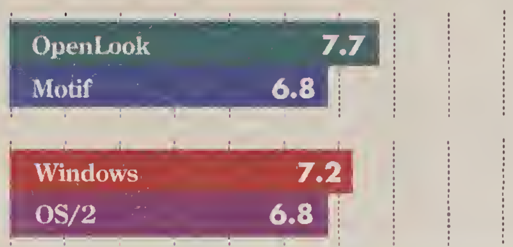
7.3 Documentation



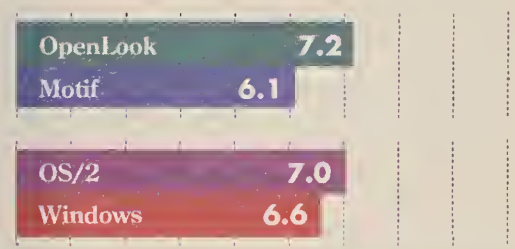
6.8 Ease of installation



6.8 Utilities



6.7 File management



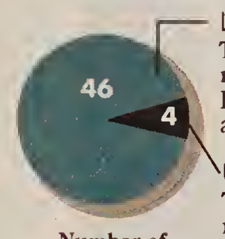
Loyalties

Would you buy the product again?

(Reasons are based on the most frequently stated responses.)

OpenLook

Responses: 50



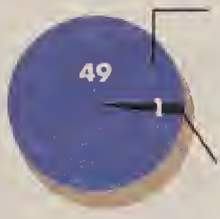
Number of respondents

Likely
The reason:
Runs our applications

Unlikely
The reason:
Difficult for new users

Motif

Responses: 50



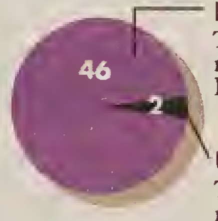
Number of respondents

Likely
The reason:
Industry standard

Unlikely
The reason:
Need to evaluate others

OS/2

Responses: 48



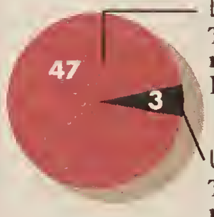
Number of respondents

Likely
The reason:
It is powerful

Unlikely
The reason:
Better tools on Windows

Windows

Responses: 50



Number of respondents

Likely
The reason:
Ease of use

Unlikely
The reason:
No need for GUI

Verbatim

What do you like best/least about this product?

(Responses are based on the most frequently stated answers. Quotes are selected from users' responses.)

OpenLook

Likes

Ease of use
"It's very customizable and is visually appealing."

Dislikes

Poor performance
"The performance is weak — it's not too good as far as resource usage goes."

Motif

Likes

Ease of use
"Having the common, graphical interface gives us more productivity."

Dislikes

Poor performance
"It's relatively slower and uses a lot more bandwidth than a command-line interface."

OS/2

Likes

Multitasking
"It has true multitasking — the operating system stays up when an application crashes."

Dislikes

Resource consumption
"It needs a lot of memory and a huge hard drive."

Windows

Likes

Ease of use
"It helps get our users over technophobia."

Dislikes

Poor performance
"Performance is slow due to the overhead of Windows."

Vital statistics

Total number of respondents: 200

What is your position?

CIO/VP/IS director	11
IS manager	28
Network/LAN administrator	15
Operations	13
Systems analyst	42
Other	91

What is your responsibility for GUIs?
(Multiple responses allowed)

Evaluate or recommend vendors	171
Determine need	145
Select vendors	131
Set standards for organization	123

How many PCs/workstations at your location use GUIs?

More than 500	9
101-500	21
51-100	19
50 or less	151

Desqview/386 results

With a response base of 18 users, Quarterdeck Office Systems' Desqview earned the following scores in these key categories:

Compatibility	7.6
Local-area networking capabilities	7.5
Ease of use	7.5
Multitasking	8.2
Value for the dollar	8.2
Performance	7.4

In verbatim responses, users lauded Desqview for low overhead and good memory management capabilities. On the downside, they mentioned some compatibility problems with new applications.

METHODOLOGY

Products included in this Buyers' Scorecard are the market share leaders among graphical user interfaces (GUI) for desktop computing, including both workstations and PCs.

The response base was 50 users each for IBM's OS/2, Microsoft Corp.'s Windows, Sun Microsystems, Inc.'s OpenLook and the Open Software Foundation's Motif as well as 18 users for Quarterdeck Office Systems' Desqview.

Desqview was not included in the overall score because the number of respondents rating the product was below the required minimum of 30 respondents. Respondents reported using the following platforms to run their GUIs:

- Intel Corp. 80386 PCs (34%).
- I486 PCs (24%).
- Workstations running Sun Microsystems, Inc.'s Solaris (13%).
- Workstations running Unix variants from other major vendors (13%).
- Other (16%).

User names were obtained from nonvendor sources. First Market Research, an independent data collection company in Austin, Texas, conducted the survey and tabulated the results.

The survey was conducted by telephone over a two-week period last month.

Users rated their satisfaction with their installed products and were not asked to compare or rate one product directly against another in the Scorecard.

To compute the overall score for each product, we performed the following steps:

1) Multiply the product's score in the first category by the user importance rating for that category to obtain the weighted score.

2) Repeat the process for all remaining categories.

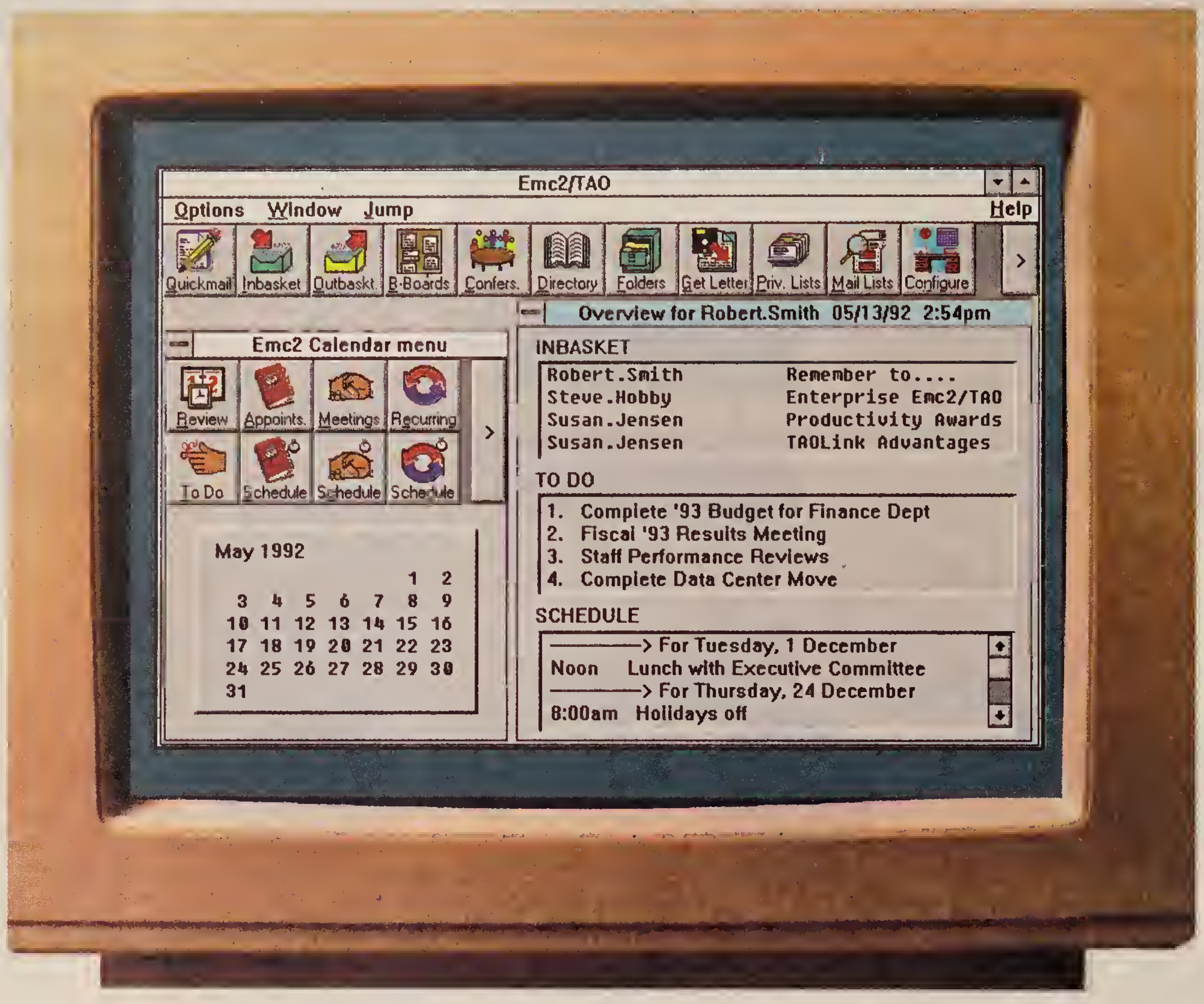
3) Average the resulting figures for the average weighted score.

4) Convert the average weighted score to base 100; the ratio of the average weighted score to the average user importance rating is equal to the ratio of the overall score to 10. Numbers were rounded off where necessary.

ACKNOWLEDGMENTS

Computerworld thanks the following for their assistance in preparing the Buyers' Scorecard: Lew Brentano, Computer Intelligence/Infocorp; CW Database Division; Forrester Research, Inc.; International Data Corp.; and Earl Rich, Faulkner Technical Reports.

E-Mail For Both Mainframe And LAN Is A Huge Headache…



Overview for Robert.Smith 05/13/92 2:54pm

INBASKET

Robert.Smith	Remember to....
Steve.Hobby	Enterprise Emc2/TAO
Susan.Jensen	Productivity Awards
Susan.Jensen	TAOLink Advantages

TO DO

1. Complete '93 Budget for Finance Dept
2. Fiscal '93 Results Meeting
3. Staff Performance Reviews
4. Complete Data Center Move

SCHEDULE

————> For Tuesday, 1 December
Noon Lunch with Executive Committee
————> For Thursday, 24 December
8:00am Holidays off

May 1992

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

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Utility looks to STAR to find answers

Distributed trouble-analysis system links service and field crews to help speed crisis response time

BY MARYFRAN JOHNSON
CW STAFF

SAN FRANCISCO — When an earthquake or some other disaster knocks out electricity in Northern or Central California, the same fate often befalls the communication between Pacific Gas & Electric Co.'s (PG&E) corporate mainframes and its regional divisions.

So at a time when customers and the press are clamoring for information — "When will the lights go back on? What areas are out of service? How many people are affected?" — the regional divisions of the nation's largest gas and electric utility find themselves unable to come up with those answers.

Enter the STAR project.

The System Trouble Analysis and Restoration (STAR) project seeks to untether the computing needs of the 25 regional distribution offices from the corporate mainframe via a distributed network of PCs and Unix servers.

Now under development on a half-dozen Sun Microsystems, Inc. workstations, STAR will be an integrated set of five applications linking customer service, dispatchers, field crews, system operators and construction personnel. The applications, developed in C to ensure portability, will reside on Sun database servers in the division offices and will run under X Window System emulation on desktop PCs or on Sun workstations on a local-area network.

Dave Hawkins *hopes STAR will improve service*

The pilot project, partly installed now in the Santa Cruz, Calif., division, will be evaluated in June for a possible rollout to the other two dozen divisions, said Dave Hawkins, manager of distribution computer applications.

"The key thing is that each division group needs to know what the others are doing," he said. "Our current outage information application is on the mainframe, and when those links are broken, it can't be used. With a distributed system, the applications can be self-contained within each division."

Today, there is no reliable, convenient way for the customer service representatives and electric operations groups to share information about outage identification, repair and restoration, he said. Even in nonemergencies, better coordination between field and office workers should boost customer service, he added.

Trial period

"The goal is to have all the STAR software delivered by the end of this year, with pilot testing next year," Hawkins said. "We need to run the pilot for three to six months before we're really confident it will produce all the results that we want."

In PG&E's Santa Cruz division — covering several cities with more than 100,000 customers — STAR will start out by providing crew monitoring information to customer service representatives. When outages occur, customers who call the company will talk to someone with fresh, detailed information.

"The customer service rep essentially will be able to tell the customer that the outage problem has been identified, that the crew is estimating another two or three hours to fix it and so forth," Hawkins said.

Eventually, PG&E plans to put mobile data terminals in its trucks so crews on the scene of an outage can enter information into the system from the field. Currently, they use telephones or radios to contact a dispatcher.

With more than 20,000 PCs in use on the corporate network, PG&E's investment in training and office applications is too vast to consider replacing the PCs with Unix-based workstations, Hawkins noted.

"Ultimately, the STAR applications have to run on Intel-based machines," he said. "Obviously, we will need a multitasking operating system for it, but we're still debating whether that will be [SunSoft, Inc.'s] Solaris or [Microsoft Corp.'s] NT."

Nice niche

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San Francisco

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Backup role

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In order for the two servers to remain in the same state, communication between the two must be almost instantaneous.

To accomplish this, network interface card vendors such as Thomas Conrad Corp. in Austin, Texas, and Eagle Technology in San Jose, Calif., are marketing special "server-to-server" cards and drivers that provide server-to-server throughput of 100M to 1.2G bit/sec. over coaxial, shielded twisted-pair or fiber-optic cable.

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SFT III cannot protect users against system or application errors in software. "If you have a driver or whatever that's chewing up memory and corrupting data on one server, that will also happen on the mirrored server," Shipp said.

Using SFT III degrades LAN performance slightly. "The algorithms required to mirror the server obviously create some additional server overhead, but I don't think the performance drop was noticeable to the users," said Gregg Scott, network manager at Oregon State University in Corvallis, Ore. "For people running mission-critical applications, the gain in reliability would be well worth the cost in performance."

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Continued on page 52

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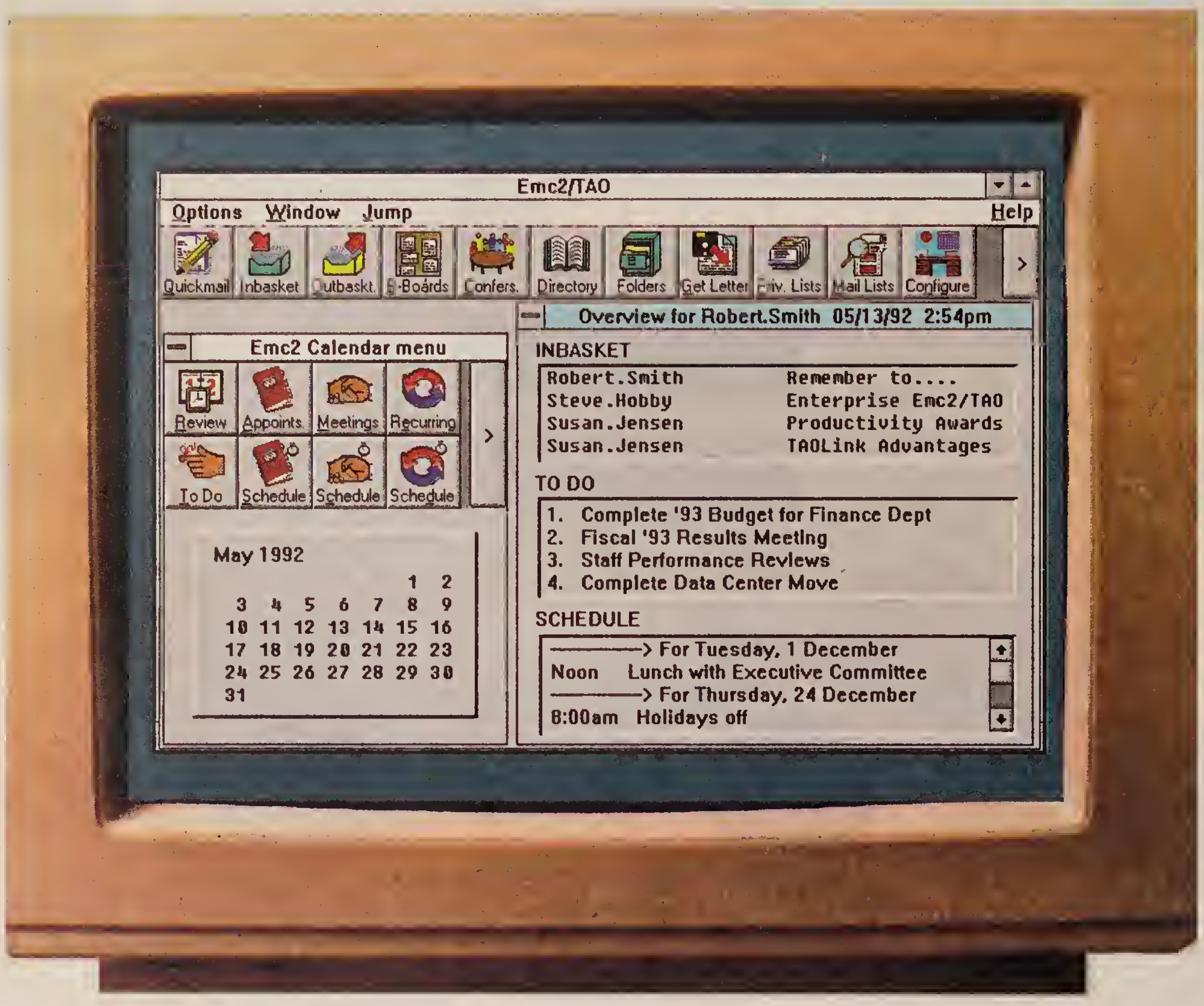

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Utility looks to STAR to find answers

Distributed trouble-analysis system links service and field crews to help speed crisis response time

BY MARYFRAN JOHNSON
CW STAFF

SAN FRANCISCO — When an earthquake or some other disaster knocks out electricity in Northern or Central California, the same fate often befalls the communication between Pacific Gas & Electric Co.'s (PG&E) corporate mainframes and its regional divisions.

So at a time when customers and the press are clamoring for information — "When will the lights go back on? What areas are out of service? How many people are affected?" — the regional divisions of the nation's largest gas and electric utility find themselves unable to come up with those answers.

Dave Hawkins *hopes STAR will improve service*

Enter the STAR project.

The System Trouble Analysis and Restoration (STAR) project seeks to untether the computing needs of the 25 regional distribution offices from the corporate mainframe via a distributed network of PCs and Unix servers.

Now under development on a half-dozen Sun Microsystems, Inc. workstations, STAR will be an integrated set of five applications linking customer service, dispatchers, field crews, system operators and construction personnel. The applications, developed in C to ensure portability, will reside on Sun database servers in the division offices and will run under X Window System emulation on desktop PCs or on Sun workstations on a local-area network.

The pilot project, partly installed now in the Santa Cruz, Calif., division, will be evaluated in June for a possible rollout to the other two dozen divisions, said Dave Hawkins, manager of distribution computer applications.

"The key thing is that each division group needs to know what the others are doing," he said. "Our current outage information application is on the mainframe, and when those links are broken, it can't be used. With a distributed system, the applications can be self-contained within each division."

Today, there is no reliable, convenient way for the customer service representatives and electric operations groups to share information about outage identification, repair and restoration, he said. Even in nonemergencies, better coordination between field and office workers should boost customer service, he added.

Trial period

"The goal is to have all the STAR software delivered by the end of this year, with pilot testing next year," Hawkins said. "We need to run the pilot for three to six months before we're really confident it will produce all the results that we want."

In PG&E's Santa Cruz division — covering several cities with more than 100,000 customers — STAR will start out by providing crew monitoring information to customer service representatives. When outages occur, customers who call the company will talk to someone with fresh, detailed information.

"The customer service rep essentially will be able to tell the customer that the outage problem has been identified, that the crew is estimating another two or three hours to fix it and so forth," Hawkins said.

Eventually, PG&E plans to put mobile data terminals in its trucks so crews on the scene of an outage can enter information into the system from the field. Currently, they use telephones or radios to contact a dispatcher.

With more than 20,000 PCs in use on the corporate network, PG&E's investment in training and office applications is too vast to consider replacing the PCs with Unix-based workstations, Hawkins noted.

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Continued on page 52

SFT III NetWare

CONTINUED FROM PAGE 51

the managing and upgrading of their servers. "With a 24-hour newsroom on NetWare servers, it's hard to schedule downtime," Wilk said. "SFT III lets me switch to the backup server, do whatever I need to on the primary server, then switch back to do maintenance on the backup server, and my users never notice."

Some users were enthusiastic about the product but are unable to adopt it because of their server configuration.

"We use high-end servers, $100,000 PowerFrames from Tricord Systems, Inc.," said Jim Queen, LAN manager at Enron Gas Services Corp., a natural gas company in Houston. "We can't afford the space or the money to buy another one," he added. "We're pressing Tricord and Novell to come up with a superserver version of SFT that would let us run mirrored systems in a single box."

The first general SFT III release will be SFT III Version 4.0, which will follow Novell's high-end NetWare 4.0 when it is released in the first quarter of 1993.

Product may ease mechanical design

BY MARYFRAN JOHNSON
CW STAFF

A marriage of convenience in the world of mechanical design has produced a new breed of hardware and software systems for the design and use of real-time control and embedded systems.

Natick, Mass.-based MathWorks, Inc. joined forces last week with Dspace GmbH in Paderborn, Germany, to give users a no-code-writing, plug-and-play approach to real-time design.

"What they're doing takes the risk and uncertainty out of mechanical design, which is very attractive to businesses like car manufacturers," said Kathey Hale, a senior analyst at Dataquest, Inc. in San Jose, Calif. By bridging the MathWorks software and Dspace digital signal processing hardware, Hale added, the companies could carve out a profitable niche in the $2 billion mechanical design market.

The integrated product includes MathWorks' Matlab numerical software package, its Simulink and Simulink C Code Generator and Accelerator, plus the Dspace hardware. It will be available by the end of the year, priced at $30,000 on a Sun Microsystems, Inc. SPARCstation.

Dspace hardware includes plug-in boards for PCs, expansion boxes with bus interfaces and Ethernet-compatible expansion boxes for lab or vehicle use.

MathWorks' new Simulink C Code Generator automatically produces C code for continuous, discrete-time and hybrid systems modeled as Simulink block diagrams. Users will be able to interface the code directly to hardware for real-time testing.

Previously, engineers had to write C code manually, a time-consuming and usually bug-generating process. The direct linking of code into real-time testing environments was either too expensive or too difficult to attempt.

One beta-test user is Arvin/Calspan Corp. in Buffalo, N.Y., which operates experimental aircraft for in-flight simulations of aircraft design.

"We've always been Matlab and Simulink users for our design process. Now we can design flight control systems in Simulink and use the code-generation product to generate code to run on the Dspace hardware," said Paul Deppe, a senior pilot and electrical engineer.

DEC introduces intelligent POS terminal

BY ELLIS BOOKER
CW STAFF

After six years of selling customized retailing systems, Digital Equipment Corp. introduced its first open architecture, intelligent point-of-sale (POS) terminal recently.

The DECpos is 386SX-based and can run third-party software under DOS, OS/2 and Unix. In its basic configuration, the disk-based DECpos costs $3,500; a diskless version is priced at $3,000.

Explaining why retail customers have gravitated toward general-purpose PC-based POS systems, DEC's retail industry manager for in-store systems, Herb Cline, said, "Prices for PC platforms have dropped from $8,000 to less than $2,000 over the past five years, but dedicated POS prices have held steady."

In addition, Cline said, open systems are easier to mix and match — an important consideration given the firestorm of acquisitions and mergers in the retail industry.

DEC will continue to sell its nonintelligent POS, the DECcashier, as well as in-store processors, a network management product for retailers and integration services.

DEC made its introduction at the Riscon retailing conference in New Orleans. Also showing its wares at Riscon was NCR Corp., which announced a portable purchase-order system based on its NotePad pen-based computers.

Running Portable PO software, the NotePad screen becomes a purchase-order form. As a buyer fills in the blanks on the form, the NotePad changes these handwritten entries into text and shapes. In addition, Portable PO can store customer lists as well as pop-up sketches and photographs of products.

Developed jointly with San Diego-based JDS Solutions, the Portable PO software ranges in price from $1,000 to $2,000, depending on quantity.

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Massive image storage aids publisher

BY ELLIS BOOKER
CW STAFF

ENGLEWOOD, Colo. — Information Handling Services, Inc., the world's largest republisher of industrial documents and catalogs, has been steadily growing its electronic document databases since 1988, when it deployed its first imaging system.

Indicative of this progress, Information Handling Services this summer upgraded the capacity of that imaging system. The new system, which comes from IA Corp. in Alameda, Calif., has a storage capacity of 2T bytes.

"We've got 8 million images in currently, and that can grow, with the hardware we have in place today, to 2T bytes," said Dan Denkin, Information Handling Services' senior manager of microfilm/electronic imaging. Denkin added that the IA system was designed to grow much larger.

Information Handling Services collects, archives and distributes, with indexes, technical reference information from a host of places, including military, federal, industrial, manufacturing and environmental sources. The company then outputs this information in a variety of formats — CD-ROM, microfilm and so on — to its 15,000 customers in 80 countries.

The advantage of imaging, Denkin said, "is pages come in once, we index them and check them for quality and then we can output them in different formats."

With the imaging system and its homegrown indexing application, Information Handling Services can also rapidly create customized publications.

Dan Denkin: *8 million images and more*

The new imaging system replaces the one the company deployed in 1988 from Integrated Automation, a Litton Industries company.

Integrated Automation was renamed IA Corp. in August after it was purchased from Litton by a management team.

The new, $5 million imaging system comprises four servers. Three Sun Microsystems, Inc. servers — two for output and one system controller — are connected on a Fiber Distributed Data Interface (FDDI) 100Mbit/sec. local-area network. Another server is used for input and receives the scanned images prior to having them written to optical disc.

The FDDI LAN features a Network Systems Corp. router that links to a 10M byte/sec. Ethernet LAN containing terminals, PCs, printers and scanners.

On a busy day, Information Handling Services can scan a whopping 35,000 pages into the imaging system. It can output 250,000 images in the same time frame.

Even so, Denkin pointed out that scanning paper documents is a bottleneck. "If we could get documents electronically, it would help," he said, noting that republishers such as his company have for years been able to receive text electronically in ASCII form. The catch, he said, is getting machine-readable raster images from publishers.

Reflecting this publishing reality, in fact, Information Handling Services produces three kinds of electronic products: Full-text publications with no images, text with indexes that point to raster graphics and compound documents, which put the text and graphics on the same page.

Large-scale imaging

Technical reference publisher Information Handling Services combines a Unix-based document imaging system with its own mainframe-based indexing scheme.

The index sits on Amdahl Corp. and Digital Equipment Corp. VAX platforms. It allows workers at PCs and dumb terminals to create custom reference documents.

Indeed, with the Information Handling Services image system, most of the work can be done directly from the index. Workers rarely need to dip into the 8 million images maintained on the company's four optical jukeboxes from Cygnet Systems, Inc. in San Jose, Calif.

IN BRIEF

Mac apps on RS/6000

■ **IBM** users interested in running **Apple Computer, Inc.** Macintosh applications on their RISC System/6000 workstations should be able to do so next year, once San Diego, Calif.-based **Xcelerated Systems, Inc.** finishes the port of its Liken software to the IBM platform. Liken enables users of Unix workstations with the X Window System environment to run shrink-wrapped Macintosh applications without modification.

■ **3M Co.** announced Magnus 1.2 GB, a 1.2G-byte ¼-in. data cartridge that works with IBM's latest RS/6000 workstation models. The workstations feature 1.2G-byte, ¼-in. tape drives for software loading and fixed-disk backups. The tape is available now for $57.

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NEW PRODUCTS

LAN hardware

Eagle Technology, Inc. has announced the NetWare Mirror Server Link, a high-speed communications card.

The product was designed for Novell, Inc.'s NetWare System Fault Tolerance (SFT) Level III Servers, and it supports NetWare SFT III server-to-server communications at an actual data rate of 128M bit/sec., the company reported.

The product allows for a second network server to mimic the activity of a primary server. The second server becomes the active server instantaneously and transparently if the primary server goes off-line.

The NetWare SFT III has 32-bit shared-memory architecture that allows 32-bit packets to be transferred between the network interface card and the host CPU at a low latency rate.

Prices start at $1,095.

Eagle Technology
1160 Ridder Park Drive
San Jose, Calif. 95131
(408) 441-7453

FiberNet Research, Inc. has introduced the FR1140 fiber-optic Fiber Distributed Data Interface (FDDI) network interface adapter.

The product was designed for the IBM PC/AT, XT/AT bus. The FR1140 is an ANSI-compliant FDDI card that features on-board 128K-byte random-access memory, Advanced Micro Devices, Inc.'s Supernet 2 chip set, a Single Attachment Station and a 4M byte/sec. data transfer rate onto the XT/AT bus, the company reported.

The adapter costs $995.

FiberNet Research
1 Tara Blvd.
Nashua, N.H. 03062
(603) 891-2600

LAN software

LaserData, Inc. has introduced two LaserView document imaging software products.

According to the company, LaserView Optical Storage for NetWare and LaserView Integrated Printing for NetWare were designed to make it easier for users to implement high-performance imaging applications on Novell, Inc. NetWare networks. LaserView Optical Storage for NetWare is a high-capacity storage that supports write-once read-many 5-in. and 12-in. optical discs. The product is optimized for the NetWare V3.11 network operating system and can handle millions of document images. LaserView Integrated Printing for NetWare is a high-performance print service.

Prices start at $4,495.

LaserData
300 Vesper Park
Tyngsboro, Mass. 01879
(508) 649-4600

Workgroup software applications

Online Computer Systems, Inc. has started shipping the NetWare Loadable Module (NLM) version of its Opti-Net CD-ROM networking software.

The product was designed to allow local-area network users to share information contained on a CD-ROM. Up to 100 users can simultaneously share Small Computer Systems Interface (SCSI) CD-ROM drives on a Novell, Inc. NetWare 386 LAN. The Opti-Net NLM includes integrated features such as SCSI Bus Disconnect and Reconnect and caching and data prefetch. The monitor has a memo-driven management console that enables users to configure, monitor and control the CD-ROM server at the same time that it is serving users.

The product costs $1,495.

Online Computer Systems
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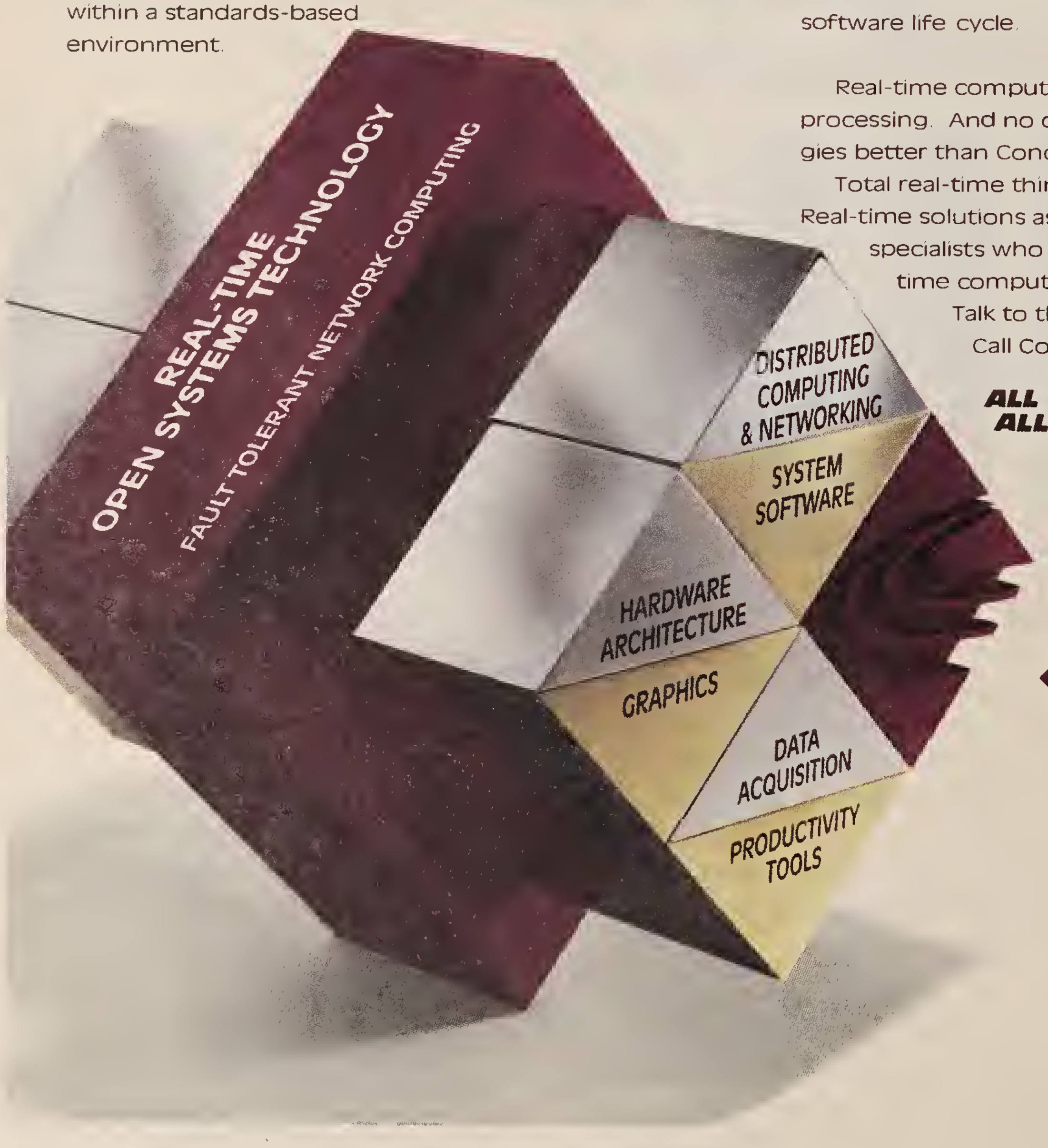

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J. P. Morgan chooses CompuServe for frame relay

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — Forging ahead with its year-old telecommunications outsourcing plan, J. P. Morgan & Co. recently signed on with CompuServe, Inc. for frame-relay services that will interconnect its domestic local-area networks.

J. P. Morgan joins about 100 other U.S. companies as a customer of public frame-relay services, according to analysts. The global financial services firm has five sites up on CompuServe's Frame-Net and plans to add eight more by the end of the year, said Thomas Hynd, vice president of network services.

Frame relay is a "fast" form of packet switching made possible by today's more reliable communications links. While frame relay has been the subject of many seminars and trade press articles during the past 18 months, actual user experience to date has been limited as telecommunications managers take time to familiarize themselves with it and evaluate it against other emerging high-speed wide-area services.

Overall price was the main factor in J. P. Morgan's signing a five-year, $3 million frame-relay contract with CompuServe earlier this month, Hynd said.

In fact, "CompuServe's service tends to be the least expensive overall because of the granularity of its committed information rate," said Richard Malone, principal at Vertical Systems, Inc., a consultancy in Dedham, Mass. He explained that CompuServe will allow users to slice their guaranteed bandwidth requirement down to as little as 4K bit/sec., while other vendors, such as AT&T and WilTel, only go as low as 32K and 64K bit/sec., respectively.

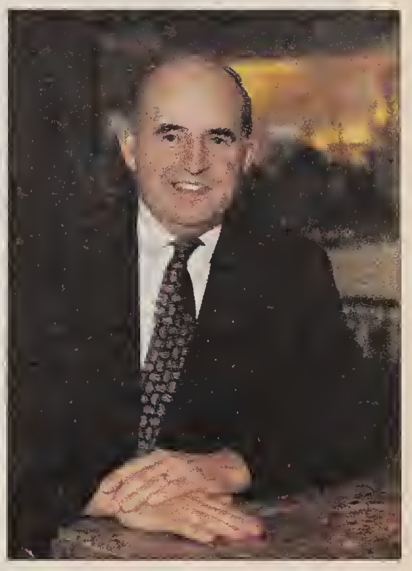
CompuServe's scheme addresses "networks in the 10- to 20-node range for a fully interconnected mesh network at the low rate," Malone said.

Third outsourcer

The CompuServe contract brings the firm's network outsource provider tally to three. The company kicked off the outsourcing of its major telecommunications components last February with a $20 million deal with BT North America, Inc. for international terminal-to-host traffic [CW, Feb. 17].

Shortly thereafter, J. P. Morgan signed up with AT&T for an international router-based LAN internetwork with no domestic links other than to its New York headquarters.

Explaining the company's outsourcing strategy, Hynd said, "As we saw our business and needs growing rapidly in terms of capacities and quality, we saw players emerging with public services that could reliably meet our needs."


Thomas Hynd *says price won CompuServe the $3 million pact*

The financial services firm is mixing and matching vendors because it is evaluating each telecommunications function that it wishes to outsource as an independent module with individual criteria, Hynd explained.

He acknowledged, "We considered the finger-pointing issue, which always arises to some degree any time one has diverse technologies and platforms. But so far, we don't see any increase because of the different networks."

Staying with Cisco

CompuServe is meeting the company's key needs such as high-speed LAN-to-LAN connectivity supporting a variety of LAN protocols via Cisco Systems, Inc. multiprotocol routers. Because J. P. Morgan is a Cisco shop, Cisco support was part of its criteria, Hynd said.

This was not because of potential interoperability problems among different vendors' routers but because "we already have expertise with Cisco," Hynd said.

Even when using a public service, he said, "as you're interacting with LANs locally, there's a certain amount of device expertise you need."

BT expands service

Telecom service provider BT announced two new frame-relay customers last week and said it has extended its ExpressLane service to several new international locations. New customer Proteon, Inc., a networking vendor in Westboro, Mass., will retain its year-old WilTel Wilpak domestic frame-relay network while hooking into BT's international service, primarily for LAN-to-LAN electronic-mail traffic, said Richard Weeks, manager of network systems at Proteon.

Weeks explained that moving E-mail "off of slow, unreliable analog lines" and putting it on fast digital lines that provide real-time communications 100% justified the move.

"We're basically paying the same price but getting several orders of magnitude greater service," he said. Proteon will expand to Paris, Frankfurt and Munich, Germany, in 1993, he said.

Meanwhile, Maxtor Corp., a magnetic storage device maker, signed on with BT to link LAN users in the UK, France and Germany to corporate headquarters in San Jose, Calif. The company is primarily helping to decentralize Maxtor's order management systems, said Dan Gentile, a network manager.

BT, which plans to cover 11 countries and 400 cities with frame-relay service by year's end, expanded the service last week to Brussels, Toronto, Frankfurt, Hong Kong, Tokyo, Amsterdam, Singapore, Stockholm and Sydney, Australia.

International service becomes important to LAN-oriented customers expanding globally. For example, BT X.25 customer Pitman-Moore, Inc. in Lake Forest, Ill., currently runs mostly terminal-to-host traffic, but off-the-shelf LAN applications could change that, said Bill Westrick, manager of distributed technology.

"At that point, the international component of frame relay would become important. We first roll out applications to regions globally. From there, they branch out to individual sites."

JOANIE M. WEXLER

Users seek cheapest way to move to TCP/IP, SNA

BY ELISABETH HORWITT
CW STAFF

While many users have already interconnected their Transmission Control Protocol/Internet Protocol (TCP/IP) and IBM Systems Network Architecture (SNA) installations, they are always on the lookout for more cost-effective, functional ways to do it.

"There is a huge installed base of IBM mainframes that need to be accessed by distributed client/server systems, and TCP/IP is becoming the protocol of choice for enabling any sort of PC to access [multivendor] computing resources and peripherals," said Joe Gottlieb, a program director at Westport, Conn.-based research firm Meta Group, Inc.

Business Research Group expects TCP/IP traffic to exceed SNA traffic on the enterprise network in three to four years.

Amoco Production Co., for example, expects to move all of its mainframe applications down to Unix systems by the end of next year, but in the meantime, its Unix users must be able to access mainframe applications and exchange mail with mainframe users, said Jon Tankersley, a research scientist at the Tulsa, Okla., Amoco Corp. division.

Right now, Amoco is trying to find ways to minimize the overhead its mainframes experience running TCP/IP applications, Tankersley said. The company is "not experiencing outrageous overhead at the moment," but it knows from past experience that the right mix of TCP/IP applications can "bring an IBM 3090 to its knees," he said.

Targeting TCP/IP overhead is the LinkMaster 6200 Network Gateway, announced last week by McData Corp. in Broomfield, Colo. While IBM's 3172 is said to offload about 30% of TCP/IP overhead from a mainframe, McData's 6200 offloads 100% of both TCP/IP protocols and applications, McData said.

In addition, the 6200 is the only communications controller besides the 3172 to take advantage of IBM VTAM 3.4's dynamic table update capability, a McData spokesman said.

This is an important feature

Continued on page 64

Integration issues

There are three typical flavors of SNA and TCP/IP integration:

- **LAN-to-host gateway:**

McData's LinkMaster 6200 Network Gateway supports TCP/IP, DECnet and IBM Open Systems Interconnect. The SNA platform is Unix on an Intel Corp. I486 with an Extended Industry Standard Architecture bus. LANs supported are Token Ring, FDDI and Ethernet. LinkMaster offloads 100% of the TCP/IP processing from the host and features dynamic reconfiguration of LAN devices.

Availability and pricing: Ships this month, priced at $21,000 to $42,000.

- **Simultaneous TCP/IP, SNA sessions on Windows:**

IBM's TCP/IP Version 2.1 for DOS supports as protocols Telnet, 3270, Digital Equipment Corp.'s VT 220 and TCP/IP Sockets. It can redirect NetBIOS packets over TCP/IP networks and supports up to 255 sessions.

Availability and pricing: Scheduled to ship Jan. 29 with a base price of $230.

- **SNA sessions over TCP/IP:**

Network Software Associates' Elite line supports DOS and Windows-based workstations. Protocols supported include IBM 3270, Advanced Peer to Peer Communications and High Level Language Application Programming Interface.

Availability and pricing: Scheduled to ship this month, $395 for the 3270 product; $3,995 for the high-end gateway.

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Banks continue to invest big in telecommunications

BY JOANIE M. WEXLER
CW STAFF

SALISBURY, Md. — Banks with assets of more than $5 billion will collectively invest $330 million in telecommunications products and systems in 1992 — about $600,000 apiece — according to a consulting firm specializing in technology trends in the financial services industry.

Primary areas of investment include expanding and upgrading backbone facilities and network management, according to Mentis Corp., which conducts an annual survey of more than 2,000 banks.

Communications expenses now make up 20% to 25% of banks' total technical operating costs, according to the firm. Financial institutions continue to make telecommunications investments even in a sparse economy "because the sheer size" of their myriad connection points reaps operational savings, said Mary Donadoni, a research associate at Mentis.

She said banks are the biggest vertical buyer of telecommunications services, second to health care organizations.

The study revealed that leased lines continue to account for the largest chunk of the telecommunications budget — about 25% (see chart). However, in three to five years, "there will be a significant redistribution of dollars to public networking vs. private," Donadoni predicted. The rate of the shift depends on how quickly new technologies roll out, she said.

Bruce Redington, director of communications at the Federal Reserve Bank of Atlanta, said that while leased lines currently account for 20% to 25% of his telecommunications budget, "dial-up networking is growing much faster than leased lines."

He noted that his organization still runs — and will likely continue to run — its steadily flowing transaction-oriented traffic across dedicated lines.

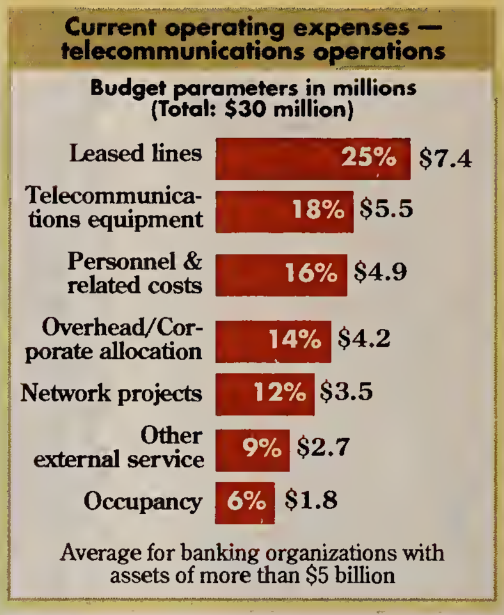
"But there are things we'll be offering in the future that lend themselves to high-speed dial-up, such as large files that don't flow all day long but are time-critical," he said. "Frame relay has potential here."

Redington said he anticipates that his organization's T1 network will remain in place. The redistribution of budget funds from private to public networking will be largely accounted for by new, public network segments as opposed to replacements of dedicated lines, he said.

However, the decision will be based on cost numbers, which are currently hazy for many fledgling telecommunications technologies, Redington noted. "There is a threshold of users that the leased line fits best, and I don't see that changing in this industry at least until the latter part of the decade," he said.

Carrying costs

The biggest single networking expense is that of leased lines, according to a survey of major banking organizations



Source: Mentis Corp. CW Chart: Michael Siggins

IN BRIEF

EDI a must for Medicaid bills

■ **The U.S. Health Care Financing Administration** has warned state **Medicaid** agencies and doctors that they must implement electronic data interchange systems for billing transactions by 1995 if they expect to get federal funds. Driving toward paperless claims processing, the agency described its plans to develop a uniform billing format with standard data elements and an ANSI X12 transaction standard.

■ **Data General Corp.** announced that it is the first vendor to implement **IBM**'s Common Program Interface for Communications (CPIC) protocol on an "open" platform: DG's Unix-based Aviion. CPIC is a programming interface that aims at making applications interoperable and portable across a variety of networking protocols, including IBM's Systems Network Architecture, Transmission Control Protocol/Internet Protocol and Open Systems Interconnect.

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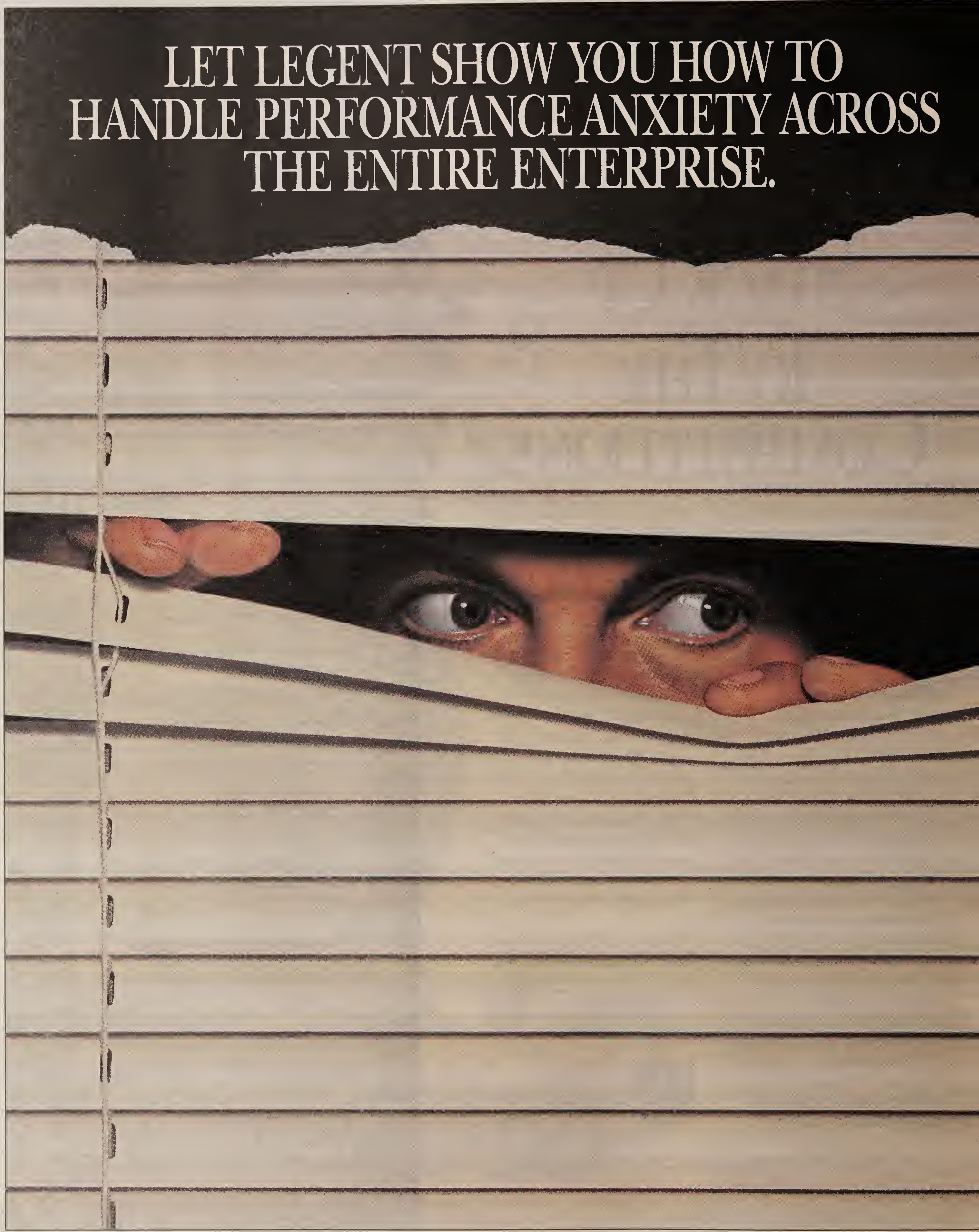
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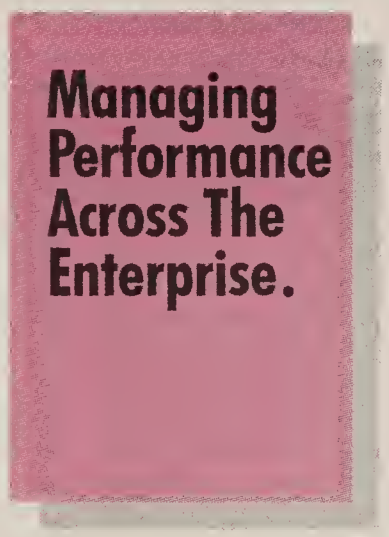
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LEGENT

Management solutions needed

Lack of net integration tools stymies some, but not all, downsizing plans

BY LYNDA RADOSEVICH
CW STAFF

The tide of companies that are downsizing critical applications from mainframes to PC local-area networks is being stemmed by a shortage of enterprise network management solutions, according to a recent report.

"The top issue is a lack of integration between management packages of all types," said Tom Wood, a senior industry analyst at the Business Research Group (BRG) in Newton, Mass., and author of the report. "Users want to put what used to be on the mainframe onto the LAN. The problem is that the LANs and internetworks aren't well-managed, and the management pieces are not well-integrated."

Despite this lack of products, 80% of users do plan to implement integrated network management during the next 24 months, according to the BRG survey. BRG surveyed 400 enterprise and systems managers in organizations of 1,000 or more employees.

The users will insist that new network and systems management packages work with networks and network management systems that they already have in place — many of which are based on Transmission Control Protocol/Internet Protocol and IPX transport standards — the report said.

Among the benefits users expect from network management systems is the ability to monitor entire systems from one console. Other benefits include greater reliability, less downtime, improved communication, total view of the network, higher performance and lower personnel costs.

Although managers want standards-based integrated systems management, they do not want to wait while vendors hash out their differences, the report said.

"Standards are the only thing that will make a more comprehensive environment possible," said Bill Lawrence, a network engineer at the San Onofre, Calif., branch of the Southern California Edison Co. "But that can take a long time and be so all-encompassing that no one can use them. True standards will evolve and be ratified by the fact that people use them."

Two such protocols already used in network management software — IBM's NetView and Simple Management Protocol (SMP), the successor to Simple Network Management Protocol — are emerging as make-due standards, according to users contacted.

"The only way we could have made our system work is by insisting on SMP standards from the vendors," said John Scoggin, supervisor of network operations at Delmarva Power & Light Co. in Wilmington, Del.

Some of the blame for the troubles integrating network management systems lies in the user community.

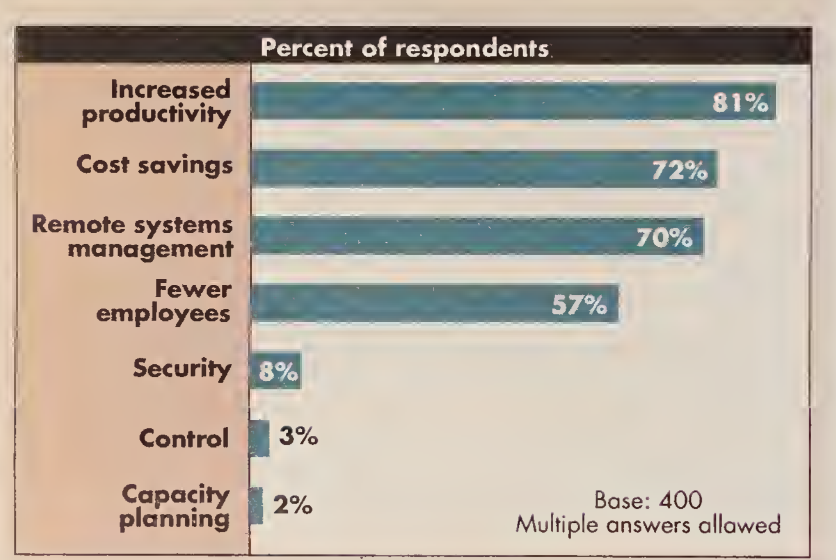
One of the biggest inhibitors to integrating network management is internal company politics, Wood said. Specifically, turf battles between information systems management and LAN administrators cause confusion over who is in charge and what needs to happen.

Until enterprisewide network management solutions exist, some users are maintaining a philosophical attitude.

"It took the mainframe people a long time to get it. It'll probably take five or 10 years before distributed network management becomes routine," Scoggin predicted.

More for less

Productivity gains and lower costs top the list of benefits cited by managers implementing a systems management package



Source: Business Research Group

CW Chart: Stephanie Faucher

NEW PRODUCTS

Gateways, bridges, routers

Cayman Systems, Inc. has introduced GatorLink, an AppleTalk Remote Access (ARA) server that supports Apple Computer, Inc.'s ARA Protocol.

According to the company, GatorLink is the first ARA server that allows up to three remote PowerBook or Macintosh users to simultaneously dial into a network. It can also connect directly to an Ethernet.

The product features enhanced access control; a Motorola, Inc. 68302 CPU optimized for serial performance that provides three integrated reduced instruction set computing engines to handle all serial I/O duties; and support for Security Dynamics' SecurID Ace/Server security system.

GatorLink costs $1,899 per unit.

Cayman Systems
University Park at MIT
26 Landsdowne St.
Cambridge, Mass. 02139
(617) 494-1999

NetPro Computing has introduced OmniWay, a product that provides Banyan Systems, Inc. Vines users with interoperability to almost any PC local-area network or host system.

Batch-oriented interoperability is offered with an assortment of platforms, including Microsoft Corp.'s LAN Manager, Novell, Inc.'s NetWare, Digital Equipment Corp's PathWorks and 3Com Corp. platforms. Users can design and develop custom interoperability solutions by using third-party utilities and simple batch scripts. OmniWay requires an IBM PC or compatible, 640K random-access memory and PC/MS-DOS 3.0 or higher.

The introductory price of OmniWay is $2,995 per gateway.

NetPro Computing
Suite E155
8655 E. Via de Ventura
Scottsdale, Ariz. 85258
(602) 998-5008

Network management

Synernetics, Inc. has announced Release 2.0 of its Viewplex Network Management System.

According to the company, the product can now operate as an application under SunNet Manager from Sun Microsystems, Inc.'s SunConnect division. Users can manage their networks and consolidate multivendor network information by using Viewplex and SunNet Manager together from a single platform.

The product has the ability to continuously learn and display updated topology maps of network devices and provides a variety of graphical displays, such as logical network devices and front-panel equipment views for the company's network devices. New tools have been provided to help users locate devices and interpret hardware addresses.

Viewplex Release 2.0 costs $5,000.

Synernetics
85 Rangeway Road
North Billerica, Mass. 01862
(508) 670-9009

Sun unveils ISDN frame-relay products

Sun Microsystems, Inc.'s SunConnect division recently announced SunLink Integrated Services Digital Network (ISDN), frame-relay and Point-to-Point Protocol (PPP) products for Sun SPARCstations.

The ISDN software supports two 64K bit/sec. ISDN channels on a Sun SPARCstation 10. It is scheduled to ship in the first half of 1993, with the station's built-in ISDN board.

The frame-relay product will enable a variety of SPARCstation models to directly communicate over frame-relay links or for one SPARCstation to act as a frame-relay gateway for other stations on the local-area network, Sun said. All three products support Transmission Control Protocol/Internet Protocol, Sun said. Availability is slated for this month.

Meanwhile, The Point to Point Protocol Consortium met to adopt a charter and elect a chairman. The organization now has 30 vendors dedicated to ensuring interoperability of multivendor routing and networked systems via PPP.

ELISABETH HORWITT

Cheapest way to TCP/IP

CONTINUED FROM PAGE 57

for companies such as Delmarva Power & Light Co. that do not want to have to take down the SNA network every time they add new TCP/IP local-area network users that want to access the mainframes, according to John Scoggin, supervisor of network operations at the utility.

Another fast-growing niche in the TCP/IP-SNA integration market is software that lets a PC handle TCP/IP and SNA terminal-emulation sessions simultaneously. Last week, IBM announced TCP/IP Version 2.1 for DOS, which allows a Microsoft Corp. Windows workstation to support up to 255 sessions. The software is said to support 3270, VT220 and Telnet terminal-to-host sessions.

IBM's product also supports Sockets, a multivendor application programming interface that now supports a wide variety of terminal-emulation, electronic-mail and database applications across a wide range of operating environments, IBM said.

The new version also supports NetBIOS networking protocols over TCP/IP, IBM said.

Vendors such as FTP Software, Inc. in North Andover, Mass., and Novell, Inc. also offer products that enable a Windows workstation to set up IBM host sessions over TCP/IP, Gottlieb said. FTP Software currently offers NetBIOS over TCP/IP and plans to offer Sockets support for its PC FTP (File Transfer Protocol) product early next year, a company spokesman said.

Some Delmarva users run FTP Software's Windows-based product over Banyan Systems, Inc.'s Vines LANs, Scoggin said. The utility uses TCP/IP to connect Vines servers and will also use it to link users to a soon-to-be-installed Tandem Computers, Inc. host, he added.

TCP/IP enabled

As a potential stopgap for Cisco Systems, Inc.'s Advanced Peer to Peer Internetwork, Network Software Associates, Inc. in Laguna Hills, Calif., recently announced that its Elite line of SNA PC-to-mainframe connectivity products will run over TCP/IP links. The AdaptSNA LAN Gateway supports TCP/IP-based links among hosts and Token Ring, Ethernet and Arcnet LANs.

The gateway saves companies from having to install a bridge or router to do 802.2 logical link control encapsulation of SNA packets so the packets can go over a LAN, a Network Software Associates spokesman said. And Elite's 3270 over TCP/IP connection gives users more full-function to mainframe resources, such as printers, than would a straight TCP/IP connection to the host, he added.

And on the flip side, Systems Strategies, Inc. will announce Express IP Router/LU6.2, which allows TCP/IP transmissions to be routed over an existing SNA connection, the company said. IBM already offers a similar product, called SNA Link, an IBM spokesman said.

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IBM Business Partner

Stratus still rock solid as it moves CISC users to RISC

BY MELINDA-CAROL BALLOU
CW STAFF

MARLBORO, Mass. — Fault-tolerant systems vendor Stratus Computer, Inc. seems to be holding solid in a weak economy.

According to financial figures announced by the company last month, third-quarter revenue grew 7%, though that was less than investment analysts expected.

While other large-systems vendors are experiencing financial distress, Stratus is growing (albeit modestly) and providing its user base with a smooth transition from its complex instruction set computing (CISC)-based platforms to its current line of Intel Corp. I860-based reduced instruction set computing (RISC) systems.

The company will make yet another move, however, to Hewlett-Packard Co.'s Precision Architecture-RISC within the next two years, which it will also have to handle skillfully.

No. 2

Stratus ranks behind Tandem but well ahead of the pack in fault-tolerant system sales

Worldwide product revenues for fault-tolerant vendors for calendar year 1991

Tandem	$1.2 billion
Stratus	$368 million
Sequoia	$59 million
DEC	$58 million
Integrated Microproducts	$4 million

Source: International Data Corp.

In addition, competitor Sequoia Systems, Inc. will come out with PA-RISC-based systems in 1993, so Stratus will have to expedite its product rollout schedule. Release of Stratus' PA-RISC-based systems is slated for 1994 at the earliest.

"The real question is how successful they will be in making a third major technology transition in five years," said Chris Christiansen, a senior analyst at International Data Corp. (IDC), a market research firm in Framingham, Mass.

CLOSER LOOK
at
Stratus

"Stratus right now is in a state of transition; on the product side, the company is moving to a wide range of RISC-based products on both its proprietary VOS and Unix System V, Release 4 operating systems," said Peter Kastner, a vice president at Aberdeen Group, a consulting firm in Boston.

Bigger shake-up

But company officials said that moving to PA will be less of a transition than the current shift from traditional CISC architectures to RISC.

"Because of the way we designed the architecture to decouple the software as much as possible from the underlying architecture, it's relatively easy to migrate to the new systems," said Bill Ledingham, product manager at Stratus. "The process from CISC to RISC has gone well, and we expect that as we ultimately move from our current systems to HP that it will be more straightforward than our current move."

Users said the current migration can be a direct one. Tom Donaghey, manager of distribution systems at The Gillette Co. in Andover, Mass., ported applications easily, as did Ray Knapp, vice president of data processing at Concord EFS, Inc. in Memphis.

"Using the Stratus Link, we were able to link the machines. The data files were on one machine. . . . We recompiled the programs, pulled it through the link and brought it all back up," Knapp said.

Stratus officials said they have shipped about 250 of the RISC systems. About half of the company's new business is RISC-based, and half is CISC-based.

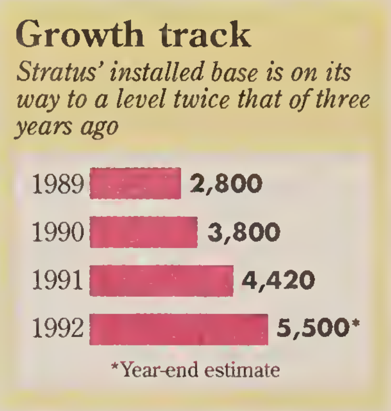
Industry analysts, however, said Stratus may have difficulty maintaining growth at a time when the company's corner of the market may be shrinking.

"Stratus is coping with increasing competition from the rest of the industry, which is catching up on overall systems availability and pushing Stratus into a smaller and smaller fault-tolerant corner of the market," Kastner said. "Where fault tolerance is absolutely required, Stratus is a standout leader, but the company will be experiencing greater difficulty in reaching a wide section of the market."

Technologies that raise availability include clustering, redundant arrays of inexpensive disks storage and data replication on multiple servers.

But Stratus officials said that while those options offer "high availability," they do not offer "continuous" availability. Stratus can offer a system with no downtime at a lower cost to users than it would take to create such a system by cobbling other technologies together, according to Ledingham.

"We don't see the market shrinking; we see the overall need for availability growing as an increasing number of applications are brought on-line," he said.



Source: Computer Intelligence/Infocorp

According to figures from IDC, however, maximum growth for the fault-tolerant market will remain at about 3% to 4% during the coming year, compared with earlier, higher growth rates of 29% to 30%.

"It will never again be as dramatic as it was," said Steve Josselyn, a senior analyst at IDC.

Satisfied folks

Stratus users speak well of the company's fault-tolerant systems and its ability to handle their needs:

➤"We feel that the current RISC machines will do well for most of the rest of this decade," said Tom Donaghey, manager of distribution systems at The Gillette Co., a division of Gillette's North Atlantic Group. "We have those systems in our distribution centers to control shipment of customer orders and inventory so that we know where everything is."

➤"Fault tolerance is key for us," said Bill Morgan, assistant vice president at the Philadelphia Stock Exchange. "Even though we do a lot of support applications on Sun workstations, our main [mission-critical] engines are on the Stratus machines, including equity, trade, order and quote processing. We're bringing in the RISC platforms to improve capacity and get more power for our dollar."

➤"We're a credit-card authorization company, and we [use Stratus] to control purchases and capture data for companies, giving the information back to them in daily reports," said Ray Knapp, vice president of data processing at Concord EFS, Inc. in Memphis. Regarding future plans for PA-RISC platforms, he said, "We try to keep current, but we won't be the guinea pig."

MELINDA-CAROL BALLOU

HP's MPE still a contender

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — A cautionary flag that reads "don't throw the baby out with the bathwater" could well hang in the office of Hewlett-Packard Co.'s Wim Roelandts.

The baby, in this case, is more like an agile grandfather: the proprietary MPE operating system that drives the widely installed but maturing HP 3000 minicomputer series.

Roelandts, who replaces new Chief Executive Officer Lew Platt as head of HP's entire computer business, and new minicomputer chief Rich Sevcik have a careful balancing act to maintain.

While they lead a charge into the open systems world with the HP/UX Unix operating system running on HP 9000 minicomputers, they must be careful not to alienate the hordes of loyal users running information systems shops on the HP 3000.

While the two hardware platforms are virtually the same, there is a world of difference in operating systems and related software on which IS shops spend millions of dollars to run their businesses.

Roelandts makes no bones about the fact that HP's minicomputer future lies with Unix. "For our Unix strategy, the No. 1 objective is to grow," he said. "For our MPE strategy, our No. 1 objective is to maintain the installed base."

He went so far as to say an MPE phaseout "is something that could happen over time" but added that "it won't happen in the foreseeable future," meaning the next five years.

Typical HP/UX users, he said, are more interested than MPE users in adopting the latest "hot boxes" and aggressively moving to new technology that they install on their own. MPE users tend to look for solutions that the vendor installs, he said.

Analysts said HP will hit a crossover point this year when 9000 sales will outpace 3000 sales. Roelandts noted that the current split is about 50/50, but "in the last couple of months, there were more 3000s sold."

He also noted that about 20% of MPE orders are for new accounts. While the 9000 Unix business grew 44% during fiscal year 1992, the MPE business nudged up only 5%, he said.

Standing firm on MPE

Many MPE users have no intention of migrating to Unix. With MPE well entrenched throughout their companies, they have no interest in going through the costs and headaches of conversions. Furthermore, users' intense loyalty to MPE has much to do with MPE simply being, in the minds of many users and analysts, a better operating system and one that is better optimized than HP/UX to the Precision Architecture-RISC chip that drives both the 3000 and the 9000.

"I believe in the genetic history of an operating system," observed Eric Fisher, a principal at Fisher Systems Consulting in Groton, Mass. He noted that for 20 years, MPE has evolved from the ground up to serve the multiprogramming and transaction processing needs of minicomputer users.

"HP/UX is a robust implementation of Unix, but it's still Unix," he said. Users said one weak HP/UX feature is security. "It's kind of an add-on in HP/UX," Fisher said.

"Unix has fewer safeguards than MPE," agreed Rodger Lindquist, manager of business systems development at Bio Rad Laboratories in Hercules, Calif., which uses both 3000s and 9000s. "The way you open and close files, you can get hurt."

Continued on page 70

Tool converts AS/400 apps to Unix

BY KIM S. NASH
CW STAFF

ANAHEIM, Calif. — Attendees of Common, a large IBM midrange user group that held its annual meeting recently, saw the unveiling of a conversion tool designed to take IBM Application System/400 applications to Unix.

System Software Associates, Inc. (SSA), a large third-party software maker in Chicago, unveiled AS/Set WDK-U, which lets AS/400 users "factor Unix into their long-term strategy without measurably increasing development time or cost," claimed J. V. Franch, SSA's director of technology.

But the catch is that the product will translate only those applications that were originally built with AS/Set, SSA's application development workbench. SSA applications and tools are installed at about 6,700 sites worldwide, according to SSA.

"If it was truly universal, it would be hard for me to imagine not buying it," said Paul Mitnick, president of Computech Systems, the information systems arm of The Equity Group Investments, Inc. in Chicago.

Mitnick is in the midst of migrating financial applications from IBM System/38 and AS/400 boxes to dual RISC System/6000s, but WDK-U is not useful to Equitable because its software has been customized in-house. "But I bet it makes some people feel better that they have more doors open to them," he said.

Limited need

"It's nice to be able to tell [AS/400 users] that they can run their applications on Unix in the future, but I don't think very many people will do it," agreed David Andrews, an analyst at ADM Consulting, Inc. in Cheshire, Conn.

AS/400 shops generally choose the machines over Unix boxes for specific reasons and are not inclined to shift strategies now, Andrews explained.

SSA is "hedging its bets" with this product, according to Andrews, and is using the Unix angle as an insurance chip against losing potential new sales to users who are unsure of which platform they will be on a few years from now.

Larkspur, Calif.-based Synon Corp., a rival on the AS/400 computer-aided software engineering front, is expected to release a similar tool soon.

AS/Set WDK-U regenerates C code for Unix machines from IBM and The Santa Cruz Operation. It is priced at $15,000 for a single-user version and $50,000 for the multiuser edition.

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IN BRIEF

CA consultant program grows

- **Computer Associates International, Inc.** has expanded its Consultant Relations Program. The three-tiered program consists of registered consultants under a base-level service under CA's Consultant Relations Agreement. Under the midlevel program, called service providers, CA field personnel are now available to book service business directly, relying on third-party providers from within the Consultant Relations Program. The top tier in the program, called certified consulting partners, is open only to those customers with "long-term business relationships with CA" or those who have participated in Pansophic Systems, Inc.'s Certified Business Associates program.

- CA has also extended its CA-Unicenter for Unix systems management package to **Pyramid Technology Corp.**'s MIServer systems. The port is expected to be available for general release sometime next year. CA had previously announced CA-Unicenter for Unix ports to Hewlett-Packard Co., Sun Microsystems, Inc. and Sequent Computer Systems, Inc. Unix-based computing platforms.

- **Andersen Consulting** has introduced usage-based pricing for its MAC-PAC IBM Application System/400 software package as an option to tiered pricing for the software products.

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Information Builders plots step-by-step DBMS linking

BY JOHANNA AMBROSIO
CW STAFF

NEW YORK — If universal data access is your goal, Information Builders, Inc. has introduced a new way of getting there, one small step at a time.

Information Builders' older product set, called EDA/SQL and installed at 300 sites, lets customers link front-end tools, including Lotus Development Corp.'s 1-2-3, with more than 50 database management systems, such as DB2 and Oracle Corp.'s Oracle. The product promises virtually any-to-any connectability.

But now, Information Builders has introduced a way for customers to link just a couple of databases instead of committing to the full-blown implementation. These EDA/SQL gateways will link 50 front-end tools to IBM's DB2 and SQL/DS DBMSs.

At $40,000 to $70,000 per gateway, this approach costs about half as much as an entire EDA/SQL, according to John Senor, a company vice president. Also, a copy of EDA/Link for $175 per copy is required on every workstation. "A lot of users require an incremental approach to data integration," Senor said. "This has been brought on by the blossoming of the client/server market, where a specific set of users need access to a specific set of data. The application may be downsized, but the data is much harder to downsize."

In the first half of 1993, he added, "we will announce gateway solutions for other database products that do not necessarily reside on the mainframe, including Unix, VAX and Hewlett-Packard." Information Builders will also sell the gateways through alternate distribution channels to be announced later, Senor said.

EDA/SQL users said the gateway approach sounds like a good idea, although not necessarily for them. "We're already committed to the full-blown implementation," said Wally Estes, a program manager at the U.S. Postal Service in Washington, D.C. "But the gateway facility might appeal to those who need a lower-cost solution."

Les Bain, manager of data resources at Del Monte Foods in San Francisco, said, "It's a change in marketing, not in strategy. The all-at-once approach is intimidating to a number of people; point-to-point is a lot more focused."

These customers said their data access strategies are proceeding apace. At the Postal Service, a corporate executive information system (EIS) is being used by approximately 15 senior executives, with a total of 1,000 users scheduled.

The Postal Service is using EDA/SQL to connect Information Builders' Focus DBMS to Lotus' 1-2-3 on PCs. Also connected in the mix are OS/2 and Digital Equipment Corp. VAX servers. At the moment, the EIS comprises data on revenue, budget, number of employees, service indicators and performance.

Still to be added to the system are marketing and customer data, Estes said.

At Del Monte, Bain said, the goal is to enable 80% of end users to access all corporate data by the end of next year. "We have the classic situation at a large company: a real mix of databases because of acquisitions," he said. These include DB2, Supra, Total, Adabas and Nomad.

By the end of this year, Bain said, Delmonte will have EDA/SQL in production and will have all the MVS DB2 data available to users.

Blue Cross/Blue Shield of Minnesota is using EDA/SQL as a decision-support tool for actuarials. "We will expand this into the claims division for 1993," said Dan Schultz, senior IS consultant. "The whole concept of sharing data is very new."

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Wang launches imaging tools

Firm continues product announcements, tries to stay afloat

BY KIM S. NASH
CW STAFF

LOWELL, Mass. — Attendees at next week's Technetron '92, a conference for Wang Laboratories, Inc. users, will for the first time see non-Wang-specific vendors hawking plans for moving VS users to Unix platforms.

Meanwhile, an August filing for Chapter 11 bankruptcy protection has not staunched Wang's flow of product announcements. It has introduced software and hardware in keeping with Office/2000, an office automation strategy pegged on the Wang Integrated Imaging System.

But it is too soon to tell whether the survival gambit is working. Wang has taken on the posture of a duck: It appears to sit serenely on the pond, while underneath the surface, feet are paddling furiously to propel it forward.

Forward, in this case, means toward Office 2000, which must incorporate hardware from other vendors to be at all successful, according to analysts. Wang itself has said IBM's RISC System/6000, which Wang resells, is the centerpiece of the framework. Toward that end, Wang recently unveiled the following products:

- **Open/Image for AIX**, introduced in June, began shipping last month. It is a three-piece package: imaging systems software, priced at $1,600 per node; application programming interface software, priced between $4,300 and $29,900; and Wang RISC Series hardware — relabeled IBM RS/6000s — priced from $19,500 to $97,500.
- **Open/Image for CICS** is a set of tools designed to make it easier to build image functions into IBM CICS mainframe applications. Prices fall between $21,200 and $128,200, depending on platform.

Remaining products in the planned 37 new VS-related wares due out this year are on schedule, according to Wang.

It's show time

A financial reorganization plan is due to U.S. Bankruptcy Court in Boston by Dec. 16, and Wang has slated its annual shareholders' meeting for a week later.

But before then, the company will have to convince its installed base of approximately 19,000 users worldwide that it is still viable. Technetron '92 will likely be key to reinforcing that message. The company must keep VS users confident while remaking itself into a software and service provider.

Among those scheduled to demonstrate Unix products at the show are Hewlett-Packard Co. and Sun Microsystems, Inc. Microsoft Corp. — a member, along with IBM, of a creditors' committee appointed to oversee Wang's restructuring — will also attend. Next, Inc. honcho Steve Jobs will deliver a keynote address, as will Wang Chairman Rick Miller, Technetron officials said.

Third-party product and service suppliers catering to VS customers will also be on hand. And they, unlike Wang, are thriving. Companies such as MacSoft, Inc. in Bakersfield, Calif., and GF Consulting Services, Inc. in Langhorne, Pa., offer parts and support for systems at discounts to Wang's prices. They have also seen an upswing in interest in migration services to Unix systems and PC local-area networks.

HP's MPE still a contender

CONTINUED FROM PAGE 67

Users also lauded MPE for its relative ease of use.

"The commands are not as cryptic as the commands in Unix," said Mike Meinz, principal technical consultant at General Mills, Inc. in Minneapolis, which once began porting a distribution system to an HP 9000 but reverted back to MPE and the 3000. "Unix was originally designed for one person in the AT&T labs. That's why there's a 'Uni' in the name."

He further noted that MPE has a simple directory structure, "whereas in Unix's directory structure, you can have multiple levels."

Users also pointed out that MPE comes with a database, while HP/UX does not.

Future challenge

So HP's challenge is to continue to support the installed base still committed to MPE, to advance the operating system and to assuage users' concerns of being deserted.

"The feeling of the MPE crowd at times is that HP has been neglecting their bread and butter in their infatuation with all this new stuff," Fisher said.

One move that may have restored user confidence recently was the appointment of Sevcik to head the minicomputer business. Sevcik was formerly the head of HP 3000 operations.

HP is also continuing to open the MPE operating system by including Posix hooks. In fact, it now calls the product MPE-IX to reflect its Posix characteristics, although the company has not yet delivered full Posix functionality. A new release, 4.5, is due this month, which HP said will be 80% Posix-compliant. Roelandts said full compliance will come by mid 1993.

HP also boasts of the ease with which software can be ported to MPE, a process that Meinz attested to.

"Today, you can take Unix software and port it to MPE with the same degree of difficulty as if you were porting it to another version of Unix," Roelandts said.

Showdown

Hewlett-Packard's MPE shows strength on usability issues when pitted against Unix

Double standards

MPE advantages vs. HP/UX (Unix)*

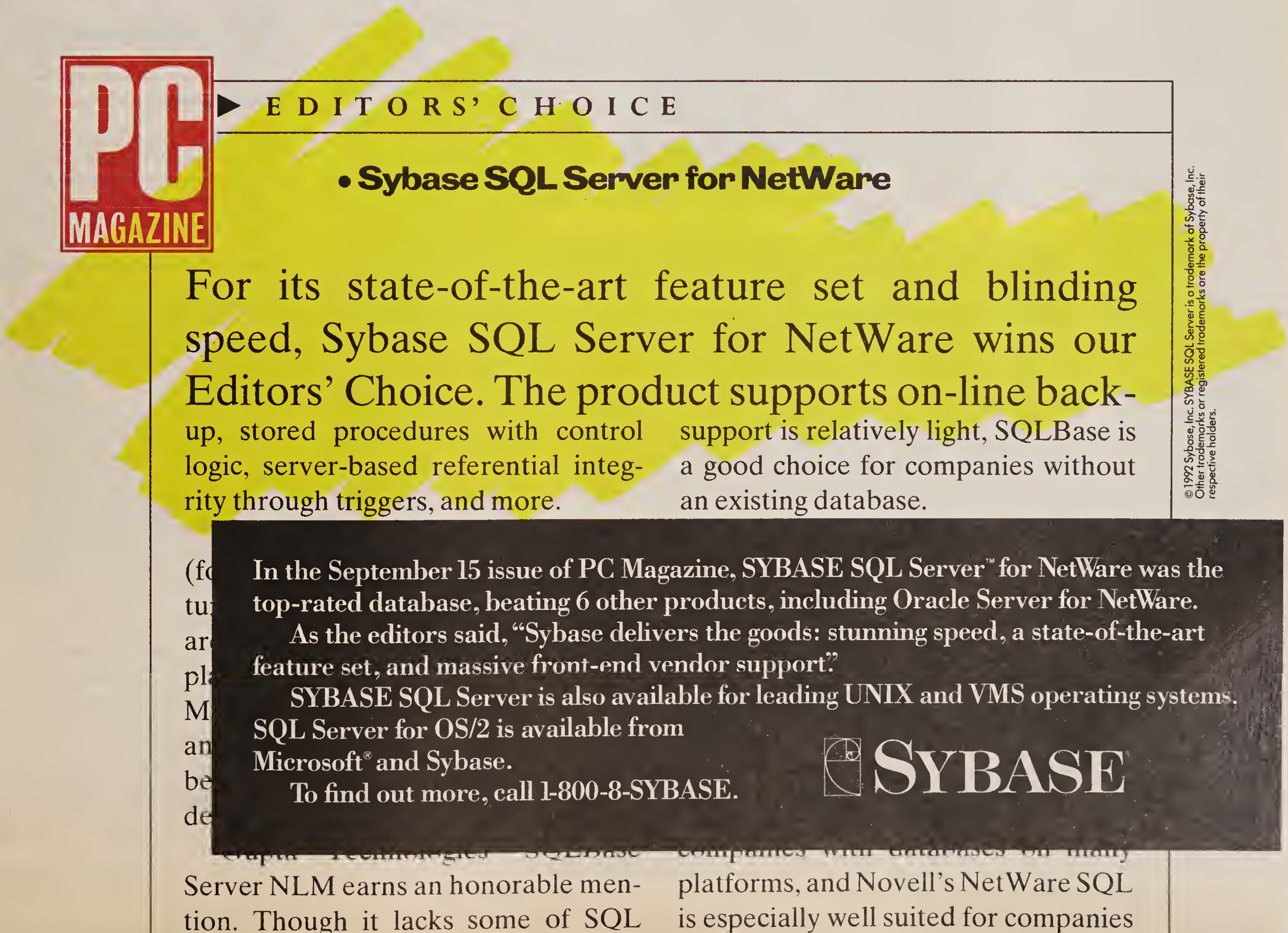
- Better security and integrity.
- Less arcane instructions.
- Optimizes to HP's PA-RISC processor.
- Comes packaged with a database.
- Better batch processing.

MPE customer profile vs. HP/UX**

- MPE: Looking for total solution installed for them, not looking for latest technology.
- Unix: Early adopters of new technology and "hot boxes"; more inclined to install themselves; price aggressive; downsizing.

Source: * Users and analysts, **Hewlett-Packard Co.

The Editors were unbiased, objective, impartial, and impressed.



PC MAGAZINE

▶ EDITORS' CHOICE

• **Sybase SQL Server for NetWare**

For its state-of-the-art feature set and blinding speed, Sybase SQL Server for NetWare wins our Editors' Choice. The product supports on-line backup, stored procedures with control logic, server-based referential integrity through triggers, and more.

(fo tu ar pl M an be de

Gupta Technologies' SQLBase Server NLM earns an honorable mention. Though it lacks some of SQL

support is relatively light, SQLBase is a good choice for companies without an existing database.

companies with databases on many platforms, and Novell's NetWare SQL is especially well suited for companies

In the September 15 issue of PC Magazine, SYBASE SQL Server™ for NetWare was the top-rated database, beating 6 other products, including Oracle Server for NetWare.

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NEW PRODUCTS

Database management

Micro Data Base Systems, Inc. has started shipping Object/1 Professional Pack for Oracle Corp.'s relational database management system.

Automatic data transfer to or from windows painted in Object/1 speeds applications development, the company reported. With Oracle's SQL language, applications can query and update data. Two interface levels are offered. Direct calls to the Oracle RDBMS are provided by the low-level interface.

A class library for a rich, object-oriented programming environment provides a high-level interface. Object/1 applications can change rows and columns offering low-level locking.

Object/1 costs $995.

Micro Data Base Systems
2 Executive Drive
Layayette, Ind. 47903
(317) 447-1122

Utilities

BlueLine Software, Inc. has introduced the Network Performance PowerPak, a consolidated offering of software performance monitoring tools.

According to the company, PowerPak enables users to measure response time as seen by the user. All of the key elements affecting that response time can be viewed through a complete menu-driven interface. Interactive viewing of historical data for problem resolution is provided by a Recall facility, and full report writing is available for historical analysis and management planning.

Pricing begins at $770 a month.

BlueLine Software
Suite 690
5775 Wayzata Blvd.
Minneapolis, Minn. 55416
(612) 542-1072

Programart Corp. has announced the APMPower application performance analysis system.

According to the company, APMPower is a software product that lets users interactively analyze the performance of IBM MVS applications at their OS/2 workstations. It works with Programart's Strobe Application Performance Measurement System.

Data collected by Strobe is downloaded from the mainframe to the workstation. The data is then interpreted and followed while it is being displayed in histograms and graphs.

Users can diagnose, detect and resolve performance issues in batch and on-line applications through step-by-step guidance of the application performance analysis.

Pricing starts at $3,500.

Programart
University Place
124 Mount Auburn St.
Cambridge, Mass. 02138
(617) 661-3020

Software application packages

Multiview Corp. has introduced Multiview Fixed Assets, a fixed-assets management system designed for the Hewlett-Packard Co. 3000 computing environment.

According to the company, the system helps users perform comprehensive tax, risk and financial management and helps them effectively manage property and maintain accurate asset inventories.

The product also has the capability to track assets from acquisition through retirement.

Users can choose the most advantageous depreciation method and select from a variety of first-year conventions such as half year, full year, modified half year, next half year, midquarter, midmonth and prorated.

Pricing ranges from $2,500 to $20,000.

Multiview
1 Van de Graaff Drive
Burlington, Mass. 01803
(617) 229-2225

Processors

EMC Corp. has announced the EMC ES/9121 memory cards designed for IBM Enterprise System/9121 processors.

The memory cards use 65-nsec, 4M-byte dynamic random-access memory. According to the company, state-of-the-art technology provides maximum reliability and response time improvements for I/O-bound users.

The ES/9121 product line is made up of memory cards with 16M- and 32M-byte capacities that are installed in sets of four and eight. Memory can run either in the ES/9121 system exclusively or with IBM memory.

Memory costs $1,500 per megabyte.

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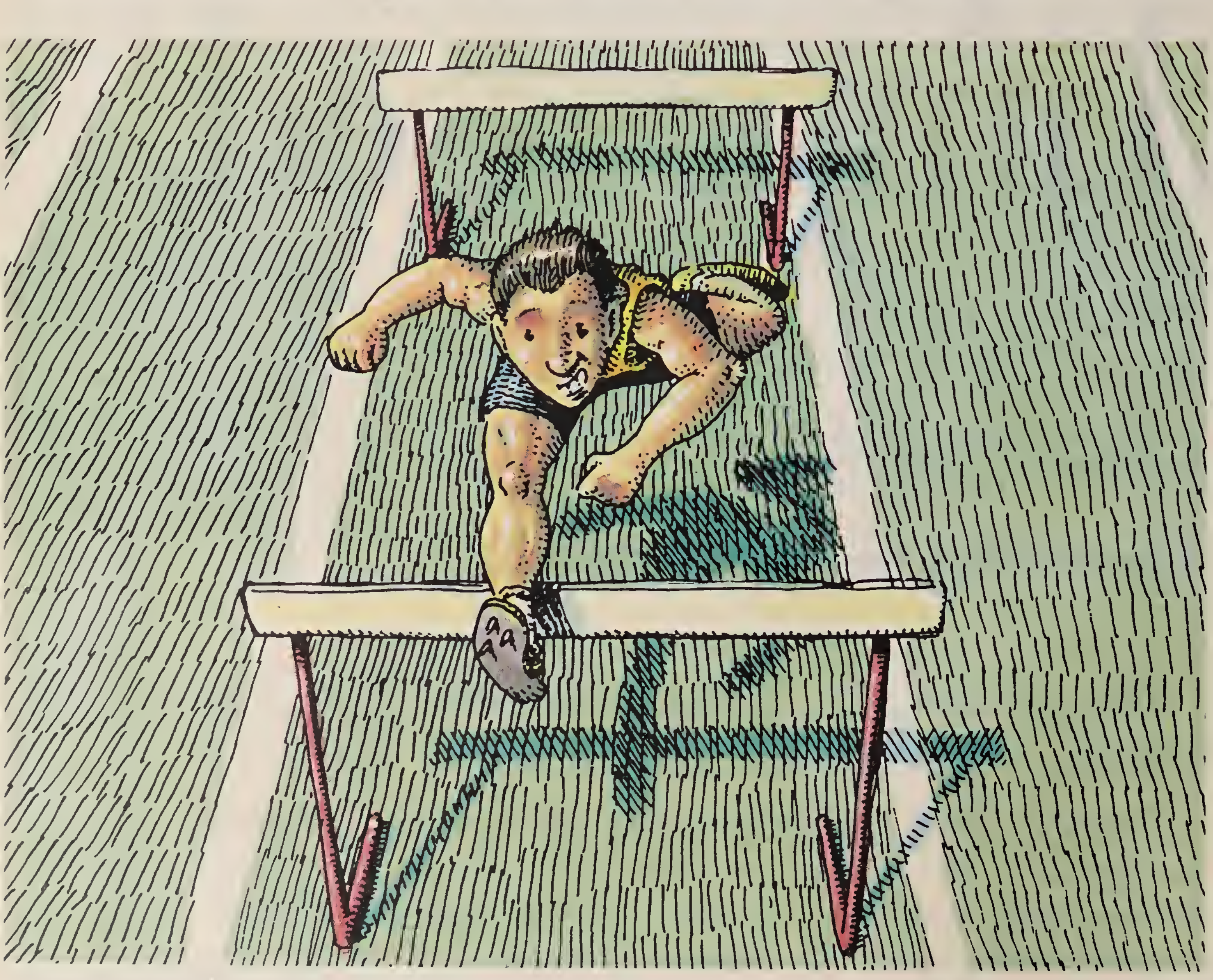

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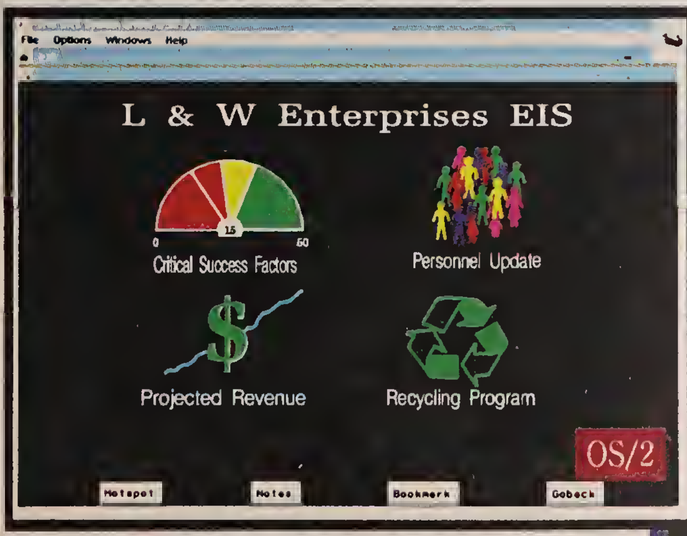

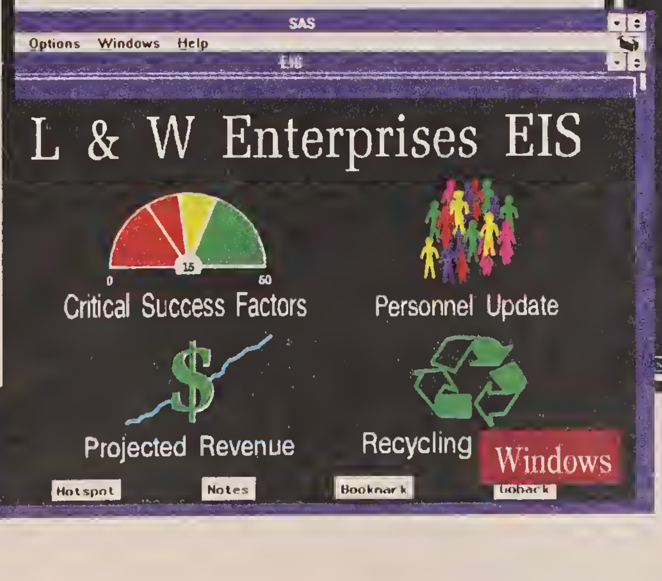

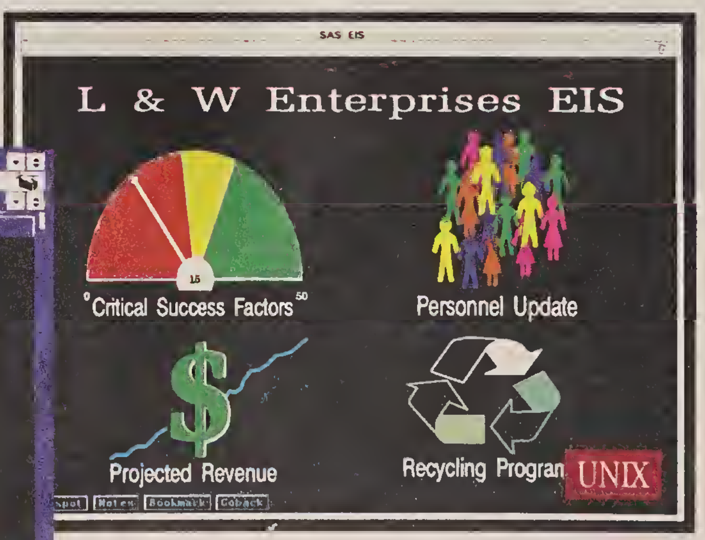

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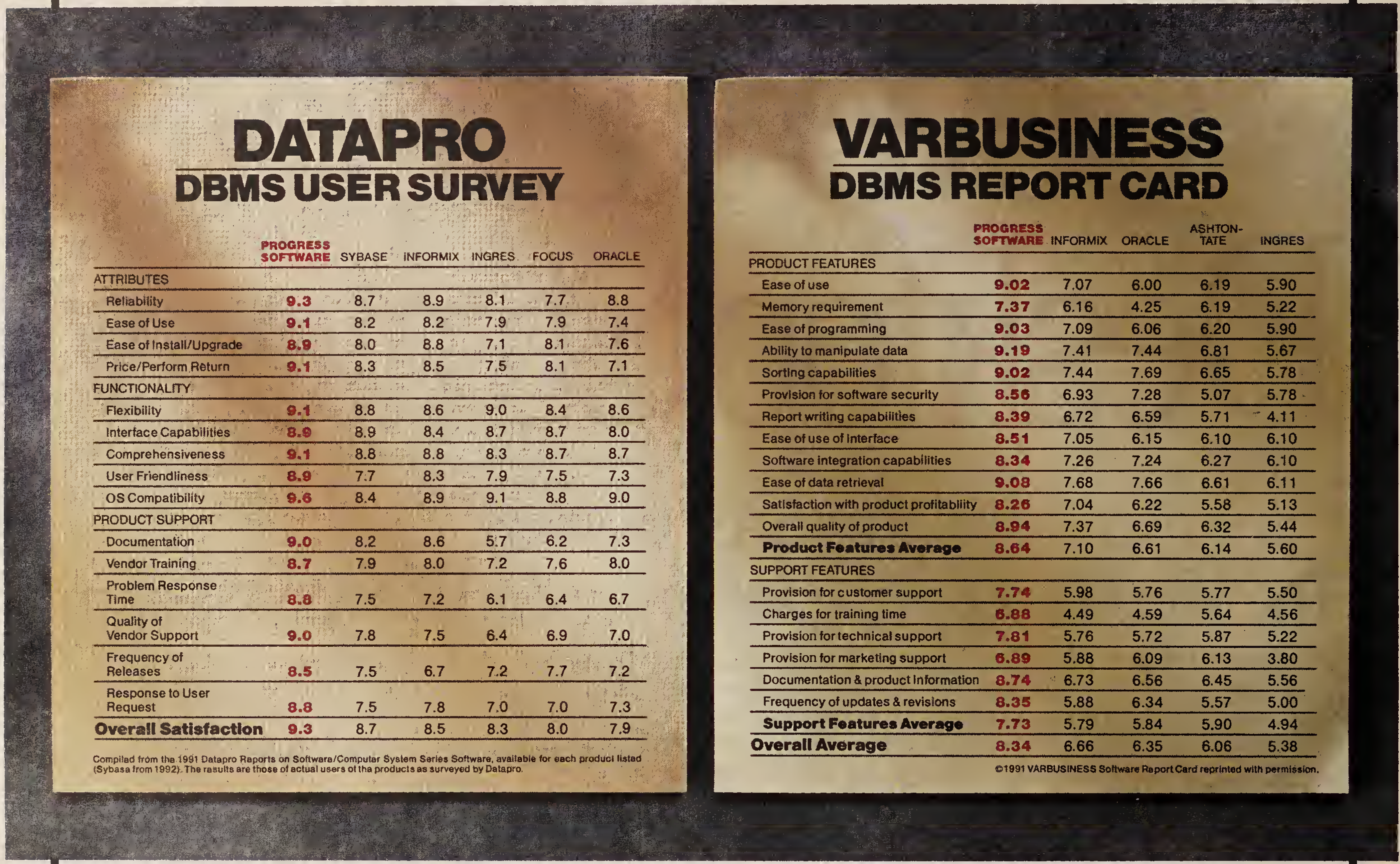
THIS IS WHAT A MASSACRE LOOKS LIKE IN THE WORLD OF APPLICATION DEVELOPMENT.



DATAPRO
DBMS USER SURVEY

	PROGRESS SOFTWARE	SYBASE	INFORMIX	INGRES	FOCUS	ORACLE
ATTRIBUTES						
Reliability	9.3	8.7	8.9	8.1	7.7	8.8
Ease of Use	9.1	8.2	8.2	7.9	7.9	7.4
Ease of Install/Upgrade	8.9	8.0	8.8	7.1	8.1	7.6
Price/Perform Return	9.1	8.3	8.5	7.5	8.1	7.1
FUNCTIONALITY						
Flexibility	9.1	8.8	8.6	9.0	8.4	8.6
Interface Capabilities	8.9	8.9	8.4	8.7	8.7	8.0
Comprehensiveness	9.1	8.8	8.8	8.3	8.7	8.7
User Friendliness	8.9	7.7	8.3	7.9	7.5	7.3
OS Compatibility	9.6	8.4	8.9	9.1	8.8	9.0
PRODUCT SUPPORT						
Documentation	9.0	8.2	8.6	5.7	6.2	7.3
Vendor Training	8.7	7.9	8.0	7.2	7.6	8.0
Problem Response Time	8.8	7.5	7.2	6.1	6.4	6.7
Quality of Vendor Support	9.0	7.8	7.5	6.4	6.9	7.0
Frequency of Releases	8.5	7.5	6.7	7.2	7.7	7.2
Response to User Request	8.8	7.5	7.8	7.0	7.0	7.3
Overall Satisfaction	9.3	8.7	8.5	8.3	8.0	7.9

Compiled from the 1991 Datapro Reports on Software/Computer System Series Software, available for each product listed (Sybase from 1992). The results are those of actual users of the products as surveyed by Datapro.

VARBUSINESS
DBMS REPORT CARD

	PROGRESS SOFTWARE	INFORMIX	ORACLE	ASHTON-TATE	INGRES
PRODUCT FEATURES					
Ease of use	9.02	7.07	6.00	6.19	5.90
Memory requirement	7.37	6.16	4.25	6.19	5.22
Ease of programming	9.03	7.09	6.06	6.20	5.90
Ability to manipulate data	9.19	7.41	7.44	6.81	5.67
Sorting capabilities	9.02	7.44	7.69	6.65	5.78
Provision for software security	8.56	6.93	7.28	5.07	5.78
Report writing capabilities	8.39	6.72	6.59	5.71	4.11
Ease of use of interface	8.51	7.05	6.15	6.10	6.10
Software integration capabilities	8.34	7.26	7.24	6.27	6.10
Ease of data retrieval	9.08	7.68	7.66	6.61	6.11
Satisfaction with product profitability	8.26	7.04	6.22	5.58	5.13
Overall quality of product	8.94	7.37	6.69	6.32	5.44
Product Features Average	8.64	7.10	6.61	6.14	5.60
SUPPORT FEATURES					
Provision for customer support	7.74	5.98	5.76	5.77	5.50
Charges for training time	6.88	4.49	4.59	5.64	4.56
Provision for technical support	7.81	5.76	5.72	5.87	5.22
Provision for marketing support	6.89	5.88	6.09	6.13	3.80
Documentation & product information	8.74	6.73	6.56	6.45	5.56
Frequency of updates & revisions	8.35	5.88	6.34	5.57	5.00
Support Features Average	7.73	5.79	5.84	5.90	4.94
Overall Average	8.34	6.66	6.35	6.06	5.38

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CPWADV1102

Tool provides database objects for development

BY GARRY RAY
CW STAFF

GOLETA, Calif. — Client/server application developers can reduce hand-coding of SQL statements with a new tool from Smartstar Corp.

Smartstar Vision provides a visual programming environment in which programmers and users can rapidly develop database applications using object-oriented techniques and facilities, according to officials at the company.

Currently available for Sun Microsystems, Inc.'s SPARCstation and Digital Equipment Corp.'s Ultrix and VMS, Smartstar Vision comprises a collection of database objects that provide most of the functions typically found in a SQL database application, Smartstar President John Markel said. "What we've developed is a complete SQL application development system that requires minimal coding," he said.

Support is provided for the Unix CISAM and VMS RMS databases, as well as Oracle Corp.'s Oracle, Sybase, Inc.'s Sybase, The Ask Cos.' Ingres and DEC's Rdb on an optional basis.

Standard functions

Included in the Smartstar Vision developer facility are objects that can query, sort, format and update database information. The objects also support standard SQL database functions such as table joins, keys, data types, scaling and referential integrity, Markel said.

Although programmers need not write any additional code to support these functions, Markel said, an interactive SQL facility is provided to add complex queries to an application or to access stored procedures.

Database operations are performed through a logical database dictionary (LDB), which Markel described as a "layer" of Smartstar Vision software that resides between an application and physical databases. The LDB dictionary stores metadata about all available databases and is used by the development facility and by completed applications to access physical databases residing on a system, Markel said.

Update routine

"You don't have to know anything about the physical database," said Keith Therrien, a Reading, Mass.-based independent consultant working at Arkwright Mutual Insurance Co. in Waltham, Mass. "Whenever the physical database changes, our database administrators have a routine, which goes out and updates the [Smartstar Vision] LDB dictionary."

Therrien, who has been using a prerelease version of the software since April, said the 600-employee Arkwright will soon use it in the company's Massachusetts headquarters and in 10 regional offices, primarily because the tool provides "a major leap from hard-coding SQL statements" with only "10% of the coding we used to do." With those savings, "the rest of the [development]

Continued on page 76

Sybase fights for developer loyalty

Hopes to lure back customers with a new generation of graphical tools

ANALYSIS

BY JEAN S. BOZMAN
CW STAFF

During its five-year history, Sybase, Inc. has created a smorgasbord of application development tools to complement its relational database management system. But users who bypassed Sybase tools in favor of third-party products several years ago seem generally happy with their choices.

Now, industry analysts said, Sybase's challenge is to entice such users back into the fold with a new generation of graphically oriented programmer tools.

Well aware that its tools have taken a backseat to its relational database, $160 million Sybase reorganized its product divisions last month. A Tools Technology Group, headed by Sybase cofounder Robert Epstein, will integrate a wide variety of character-based and graphical development tools (see chart). The Sybase RDBMS engine and connectivity software will be developed separately.

"It's a challenge for them to catch up and to be seen as a leader in both database and tools," said Tony Percy, a vice president at Gartner Group, Inc.'s Software Management Strategies Service. "Their tools are not state of the art, and many of their best sites in fact use third-party tools. It will be tough to leap over vendors who specialize in portable tools."

Percy cited Uniface Corp. in Alameda, Calif., as one of the strongest suppliers of portable software tools to Sybase users.

Still, some longtime users of Sybase's aging APT Workbench are happy to use it as is because they have little or no need for graphical user interfaces (GUI). "Our environment is 90% terminal-oriented," said Doug Rainey, a systems analyst at a Jackson, Mich., location of Aeroequip Corp., which makes components for the airline, aerospace and automotive industries. "It fits our environment. It's unfair to compare it to a tool that's for GUIs only. This thing runs on terminals and in a graphical mode, and to compare it with something that's only for GUIs isn't fair."

Many other Sybase users veered to third-party tools because they were unhappy with APT Workbench's lack of GUI support or with its limited functionality. To address those needs, Sybase shipped APT Workbench 5.0, a revised version that provided emulation of some GUIs and support for several foreign languages.

But in 1990, when Textron Financial Corp. in Providence, R.I., wanted to build Microsoft Corp. Windows applications, APT Workbench did not support GUIs at all. Instead, the leasing division of Textron, Inc. chose Powersoft Corp.'s PowerBuilder, along with Sybase's EasySQR report writer. The 300-person division has a network of local Unix servers running the Sybase RDBMS and accessing IBM mainframe data over a long-distance network.

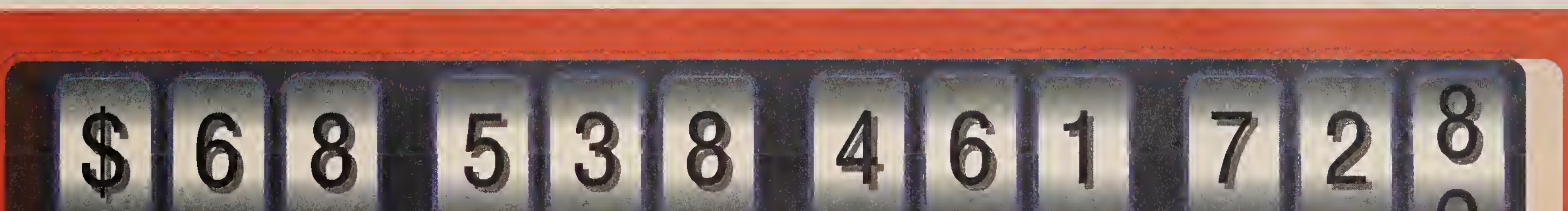
Sybase toolbox

Product	Type	Support	Price range
APT Workbench 5.0	Character-based; same GUI support	Multiplatform	$1,880 to $128,080
GainMomentum	Object-oriented multimedia	Sun workstation	$20,000 to $150,000
Deft CASE tool	Graphical upper-CASE	Apple Macintosh	$3,900 to $8,900
SQR workbench	Fourth-generation language and report writer	Multiplatform	$595 (single user) to $128,080
SA Companion	Operation-control package	Sun Unix; DEC VAX/VMS	$8,250 to $51,230

CW Chart: Stephanie Faucher

"By choosing third-party tools, we've given up simplicity in terms of support, problem resolution and even design," said Paul Hamel, vice president of systems and planning at Textron. However, another round of client/server development, beginning in 1993, may come in time for a new generation of Sybase graphical

Continued on page 77



By the end of this week Computerworld readers will have spent over $68.5 Billion on Information Technology this year – representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD
The Newspaper of IS

Source: IDG Research Services, Fall 1991

Reusable software library now available

Allows coders to 'check out' software modules

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C.— Westinghouse Electric Corp. is betting that the same automated software library it has used to manage reusable code for defense contracts will be a productivity booster in the commercial sector, too.

The Westinghouse Electronic Systems Group in Baltimore recently introduced its Reusability Search Expert (ReuSE) for use in transportation, law enforcement and commercial information systems.

The ReuSE software allows a company to create a fully cataloged library of its custom software so software engineers can "check out" modules of software for reuse, Westinghouse officials said at a press conference last week.

Like any public library, ReuSE allows an administrator to decide what homegrown software will be accepted by the library and then catalog it. Software engineers can undertake key word searches and browse through abstracts or actual source code.

Browsers can also find out the "pedigree" of the software, including who wrote it, the software's limitations and any legal or licensing constraints, Westinghouse officials said. The library includes all of the associated documentation, including user manuals.

REUSE TRACKS all users of a software version and notifies the users when the library is updated with a new version.

When a library patron finds something to check out, the code can be transferred to computer-aided software engineering (CASE) products using the IEEE CASE Data Interchange Format, according to Eric Beser, a senior software engineer at Westinghouse.

Perhaps the most important feature is in the area of version control. ReuSE tracks all users of a software version and automatically notifies the users when the library is updated with a new version. The software also keeps track of those users who still have old versions.

ReuSE is available now and costs about $36,000. The software currently runs on Digital Equipment Corp. VAX VMS systems and Sun Microsystems, Inc. systems. It uses its own hypertext database engine, so ReuSE does not require a third-party database management system to work.

Beser said the closest competitor is a software library product from SofTech, Inc. in Waltham, Mass., which requires Oracle Corp.'s database system.

One of the emerging markets for ReuSE is defense contractors who need a place to stash software written for projects that have been "mothballed" by budget cuts, Beser said. If a use for the software develops many years later, the library will have the critical information.

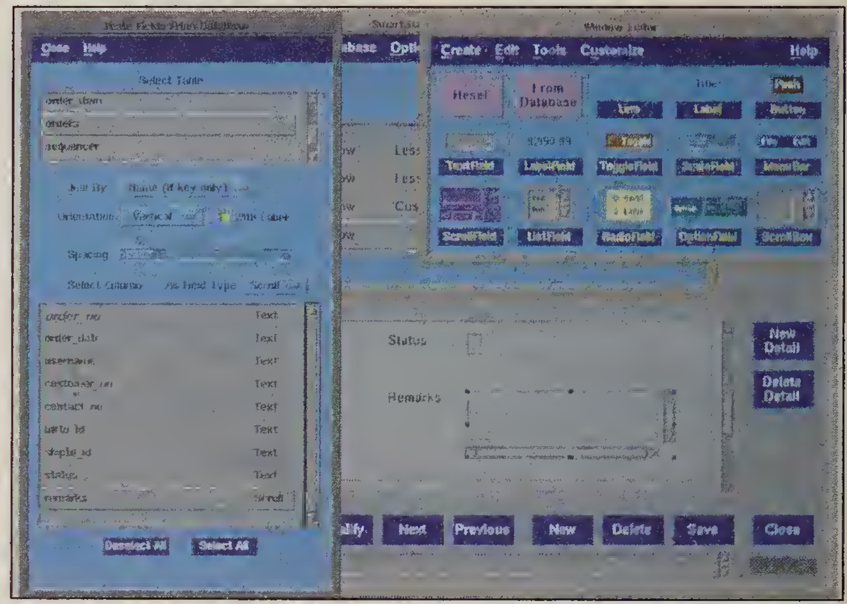
Tool provides database objects

CONTINUED FROM PAGE 75

time is spent with users to get information about their applications or to have them actually build the [application] windows they want."

Arkwright's users will run completed client applications on Microsoft Corp. Windows-equipped PCs under Xcursions, a Windows program that translates X Window System-based applications, such as those created using Smartstar Vision, for use in the Windows environment, according to Therrien.

Despite the small size of Smartstar compared with other software companies dominating the client/server tools wars, analysts said Smartstar Vision will create a new benchmark for other software vendors to note. "It's a civilized approach to SQL access," said Rikki Kirzner, principal analyst for Unix and open systems computing at Dataquest, Inc., a market research firm in San Jose, Calif.



Smartstar Vision *provides a collection of database objects that offer most of the functions found in an SQL database application*

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Sybase fights for developer loyalty

CONTINUED FROM PAGE 75

tools, said Hamel, who has participated in Sybase customer councils on future product requirements.

Sybase has tried to leapfrog database competitors by acquiring small vendors and their new technologies. It acquired SQL Solutions, Inc., a Burlington, Mass., database consulting firm with rights to the SQR report writer, several years ago.

In March 1991, Sybase acquired Deft, Inc. in Toronto, which had an upper-CASE tool and data repository for use on Apple Computer, Inc. Macintosh computers. Sybase is still working to port Deft onto Unix and PC desktop platforms, and it provides a "bridge" to IBM-compatible OS/2 machines running Sybase relational databases.

This year, Sybase invested more than $60 million to acquire Gain Technology, Inc. in Palo Alto, Calif. The target, analysts said, was a flexible object-oriented applications development framework capable of creating multimedia applications.

"The database engine is going to be the cash cow for Sybase," said Judith Hurwitz, president of the Hurwitz Consulting Group in Newton, Mass. "But now, you are going to have the Trojan horse, which is a beautiful graphical development environment for rapid application development and prototyping."

Industry analysts noted that Gain Technology is wired to support multiple relational databases, including the Oracle Corp. database and at least one object-oriented database from Objectivity, Inc. That would give Sybase an edge over larger database vendors such as Oracle.

> SYBASE HAS tried to leapfrog database competitors by acquiring small vendors and their new technologies.

Flexibility possible

Gain's technology can be used to create flexible applications, users said. "We've used Gain as an advanced interface to complex simulation software," said Herbert Lichtman, manager of Advanced Simulation Technology at government contractor General Research Corp. in Nashville.

"You can connect an application to two [relational] databases simultaneously and switch back and forth between them," he said.

Sybase executives hinted that a strategic announcement next week would include forthcoming object-oriented tools.

Centerline revises Objectcenter workbench

BY GARRY RAY
CW STAFF

Centerline Software, Inc., the Cambridge, Mass.-based developer of a variety of C and C++ application development tools for Unix, recently introduced Version 2.0 of its Objectcenter C++ programming workbench.

The workbench, which provides facilities for C and C++ programming, includes a number of revisions to existing tools, along with a C++ compiler, which was not available in earlier versions of the product.

According to Centerline, Objectcenter 2.0 provides a C and C++ mixed language capability that allows for incremental shifts to C++.

Among the enhancements made to Objectcenter are precompiled header files that were designed to reduce compilation time, support for C++ templates and user-selectable support for the Open Software Foundation's Motif interface or Sun Microsystems, Inc.'s Open Look. Also included in the enhancements is and an improved debugger that provides runtime error detection and source-level debugging of object code.

ObjectCenter 2.0 is available on Sun Microsystems, Inc.'s SPARCstations and Hewlett-Packard Co.'s HP Apollo 9000 Series 700 workstations for $3,995, the company said.

IN BRIEF

SHL to sell Bachman tools

■ Outsourcer **SHL Systemhouse, Inc.** in Ottawa plans to use and resell tools from **Bachman Information Systems, Inc.** SHL Systemhouse also joined Bachman's Development Partner Program, which means SHL will help define new products for the Burlington, Mass.-based computer-aided software engineering firm.

■ **Integris**, an independent unit of **Bull HN Information Systems, Inc.**, said it will use tools from **Easel Corp.** and **Wall Data, Inc.** to tack graphical user interfaces onto IBM CICS mainframe applications. Integris also plans to support an interface builder for X terminals connected to Unix systems and Microsoft Corp. Windows-based PCs in December.

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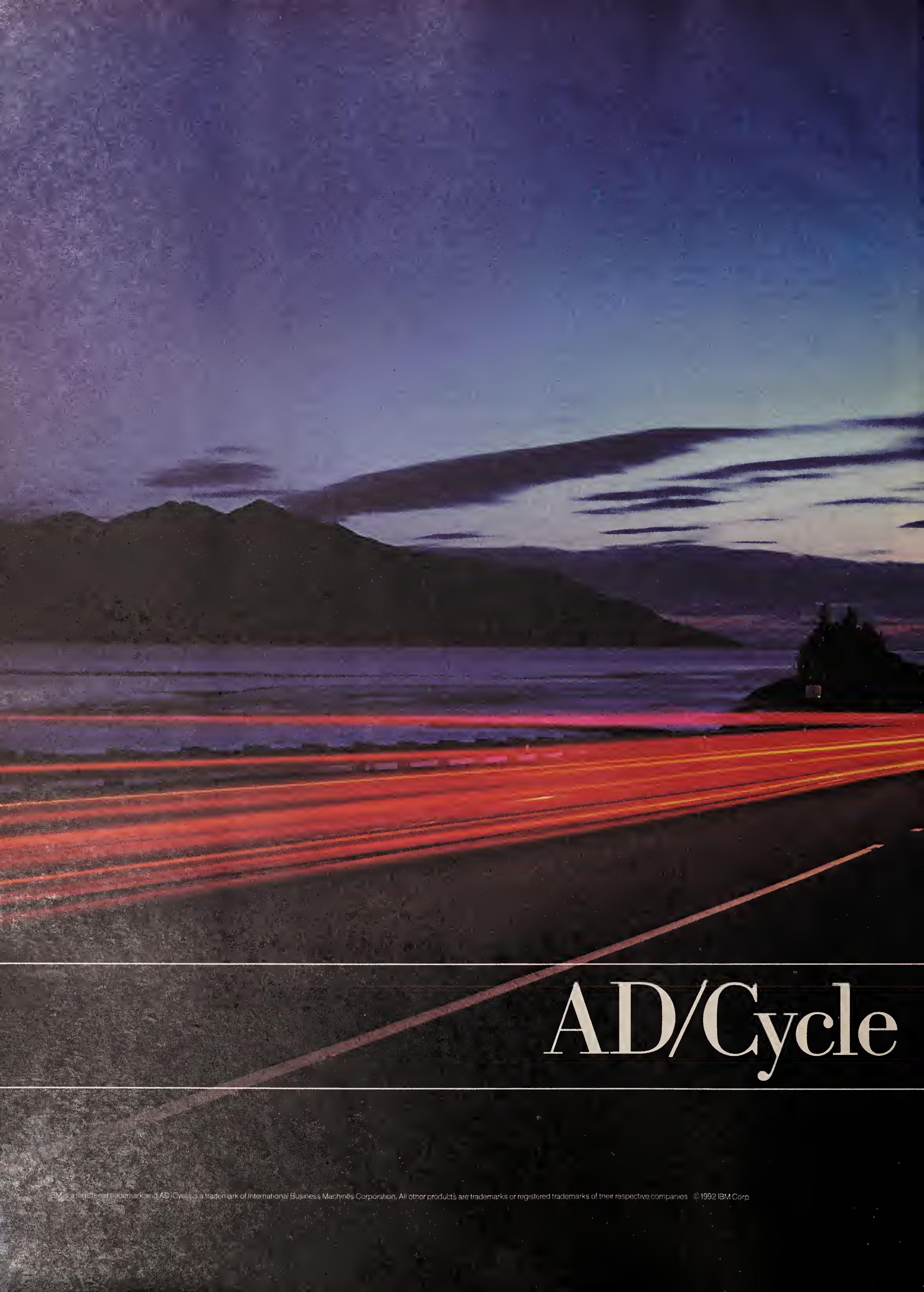

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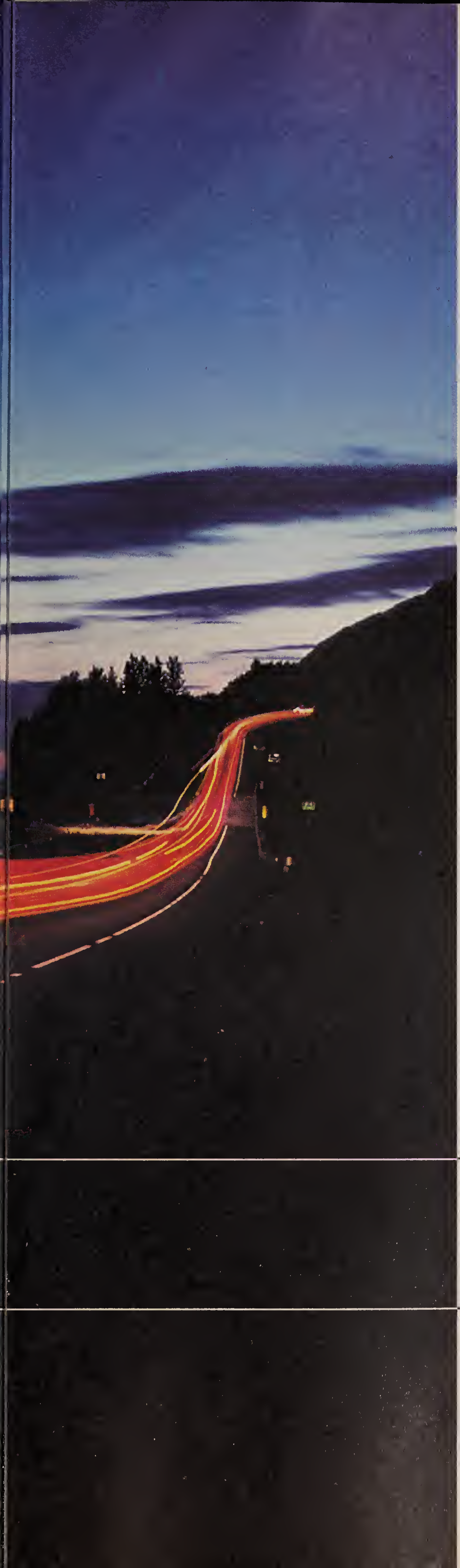

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NEW PRODUCTS

Application development tools

Integrated Systems, Inc. has started shipping Version 3.0 of SystemBuild, an integrated graphical model editor and simulator.

When used in conjunction with the company's Matrixx math and analysis software, SystemBuild accelerates the design and debugging of linear and nonlinear dynamic systems.

New features added to this version include Interactive Simulation; QuickSim Integration, a fixed-step integration algorithm that allows linear and nearly linear systems to be simulated; a Minstep feature for Variable-Step Integration that allows enhanced performance for "switch-event" problems; improved Trim Function; and Enhanced Licensing-Floating Display, the company reported.

Pricing for SystemBuild Version 3.0 starts at $8,000.

Integrated Systems
3260 Jay St.
Santa Clara, Calif. 95054
(408) 980-1500

Statistical Sciences, Inc. has announced Version 1.0 of S+Interface.

According to the company, the tool kit was designed to assist users who use custom versions of S+ data analysis software on Unix workstations.

Custom menu-style interfaces can be created, and from another C application, users can call an assortment of proven data analysis functions of S+, the company reported. Modifications can be made to application-specific programs that need advanced statistics and data analysis, and the product provides access to S+ functions from another application as if S+ were a subroutine library.

The perpetual license fee for S+Interface is $1,350.

Statistical Sciences
Suite 500
1700 Westlake Ave. North
Seattle, Wash. 98109
(206) 283-8802

Rational has introduced Insight, a reverse-engineering and browsing tool.

According to the company, the tool was designed to make Ada software easier to understand, build, re-engineer and maintain. Information is gathered about the code and then Insight creates and displays diagrams on a workstation.

The product is integrated with a software engineering environment for the development of complex applications known as the Rational Environment. As a client/server application, it runs concurrently on the Rational Environment and a workstation.

Insight provides module diagrams that can be interactively browsed, printed or included in documentation.

Insight costs $3,000 per user.

Rational
3320 Scott Blvd.
Santa Clara, Calif. 95054
(408) 496-3600

XVT Software, Inc. has announced support for Microsoft Corp.'s Windows New Technology (NT) with the latest version of the XVT Portability Toolkit.

According to the company, users can build a single C or C++ application and recompile to every major graphical user interface (GUI) without rewriting code. A 32-bit linear-memory model is used for applications built with the product.

Complete memory protection for each application is provided by the XVT Portability Toolkit when used in conjunction with NT's preemptive multitasking system.

For faster and easier GUI development, the product can abstract numerous low-level native calls into single XVT calls, the company reported.

Pricing for the Portability Toolkit for NT costs $1,450 on Intel Corp.'s I486-based systems and $4,400 on workstations.

XVT Software
4900 Pearl East Circle
Boulder, Colo. 80308
(303) 443-4223

Languages

American Interface Computer, Inc. has announced IF/Prolog Version 4.0 for fault-tolerant systems from Sequoia Systems, Inc. and Hewlett-Packard Co.

The company has ported Version 4.0 to the HP 9000 Series 1240 and the fault-tolerant Series 400 systems from Sequoia. The systems use up to 64 Motorola, Inc. 68040 processors with a fault-tolerant Unix version, the company reported.

For either machine, the fault-tolerant IF/Prolog costs $12,500.

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Rich Finkelstein, Performance Computing Inc., July 27, 1992

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DATAPRO REPORT, July 1992

"With version 2.0...PowerBuilder moves to the head of its class. [It] represents the state of the art in front-end tools."
PC MAGAZINE, September 29, 1992

"If you're shopping for a Windows-based development tool, your search may be over—PowerBuilder 2.0 is one of the most functionally mature products of its kind on the market today."
DBMS, October 1992

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Sarah Edwards, AT&T Capital Corp.

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Bob Passarella, Comdisco, Inc.

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Kent Anderson, 3M Corporate Quality & Manufacturing Services

"PowerBuilder offers the most robust and flexible client/server development environment on the market today."
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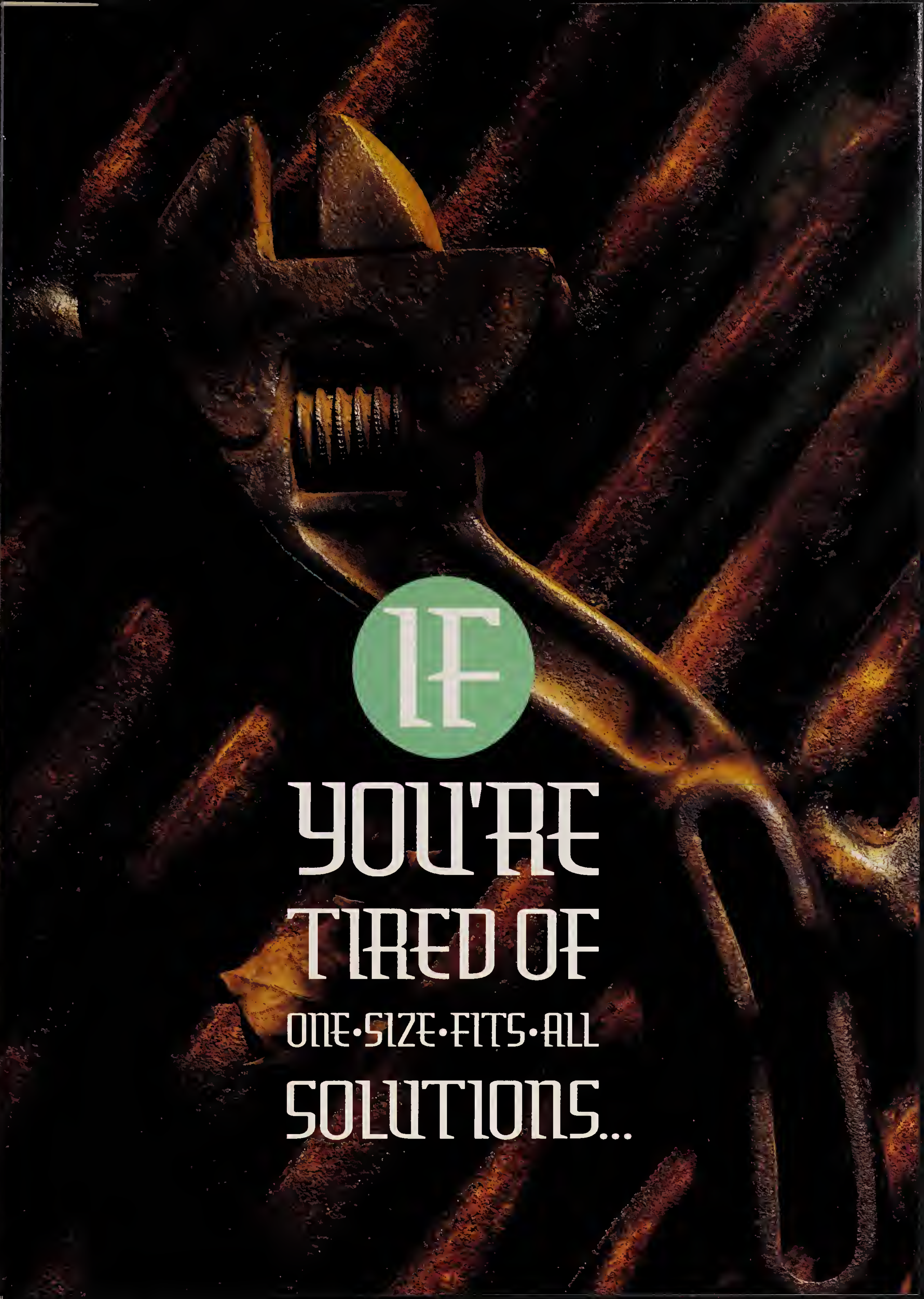
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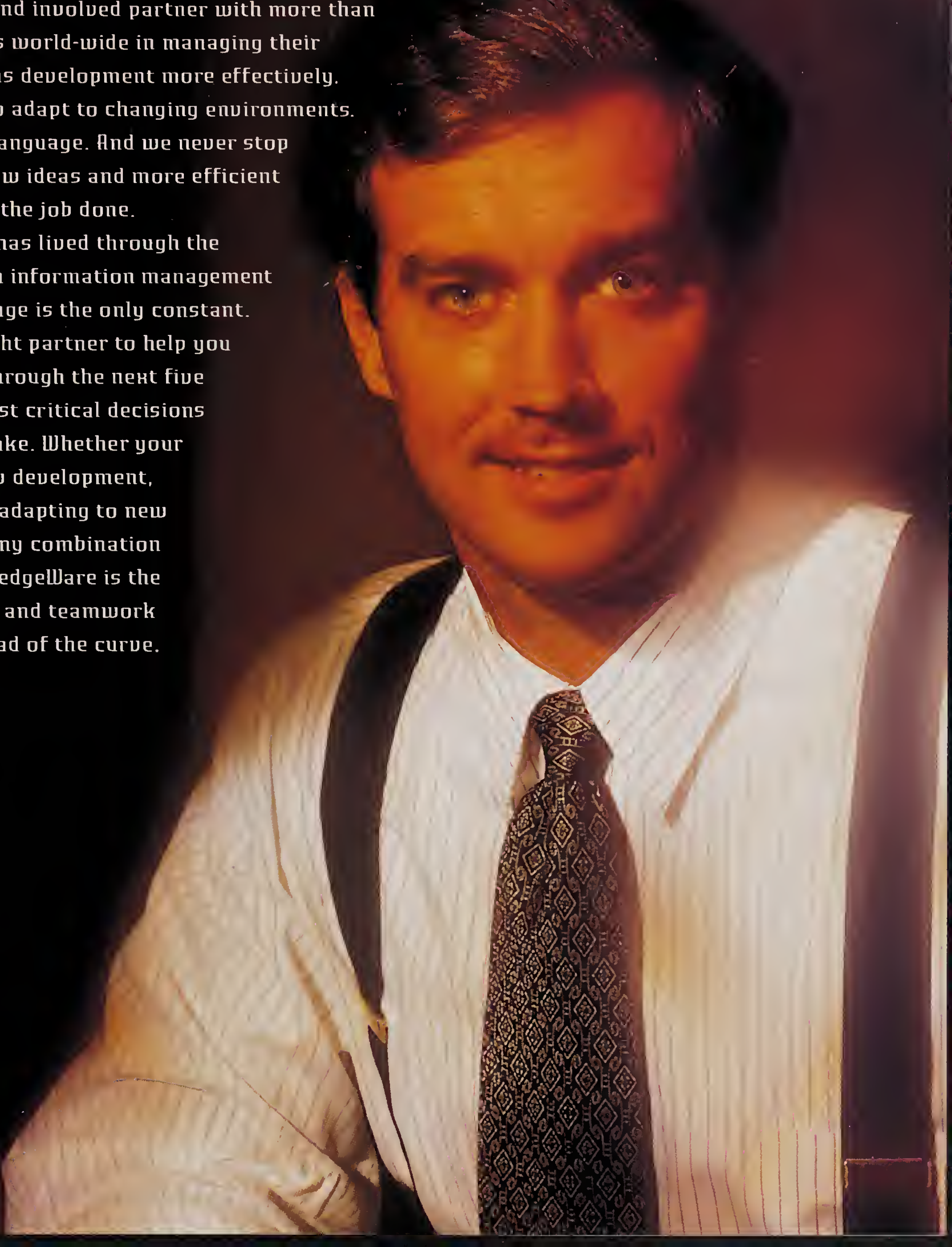

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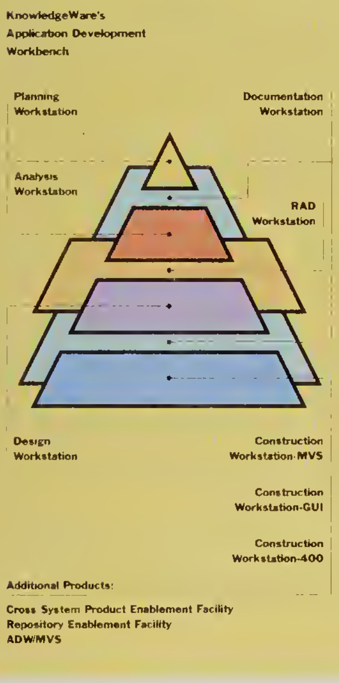
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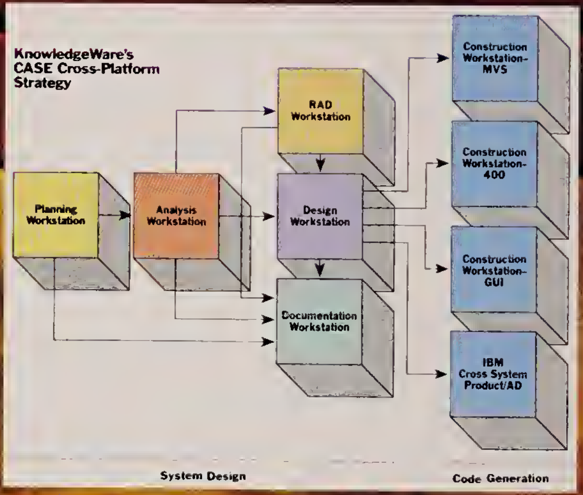
Application development for multiple target platforms.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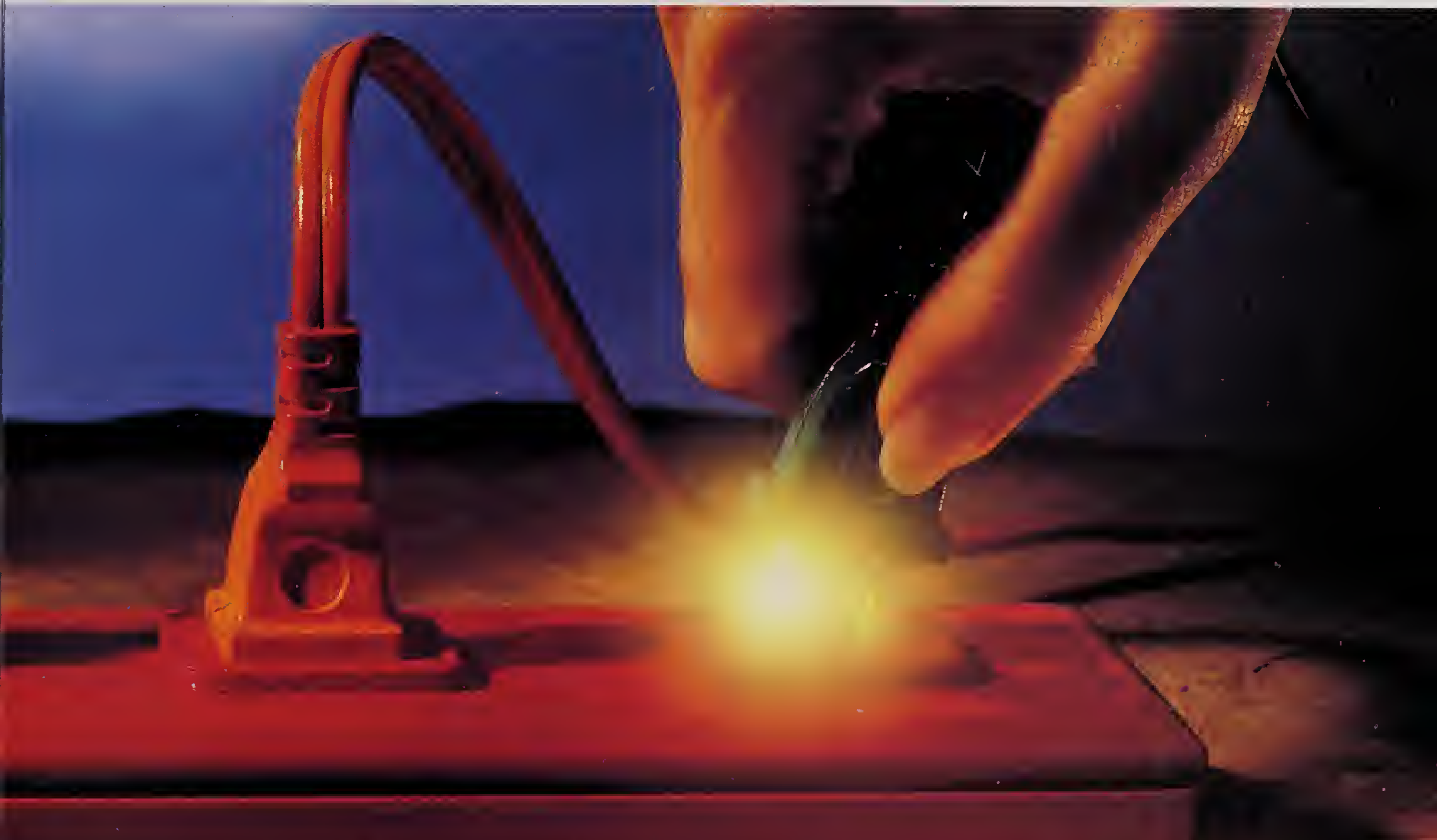
developers to deal with this complex technology can be astronomical.

KnowledgeWare is ideally positioned to help you realize the full potential of this important, but complex new technology. We not only offer key products to help you, but back them with consulting services, training and support to ensure your success.

Our ADW/Construction Workstation-GUI delivers all the benefits of integrated CASE development to client/server applications. Equally important, CWS-GUI can ease the pain of transition by allowing your developers to work in a familiar context as they create applications for this new environment.

Many of the user productivity advantages of client/server processing can be achieved without abandoning your existing mainframe applications if you use KnowledgeWare's Flashpoint.™ Flashpoint allows you to construct graphical user interfaces for your current COBOL programs in days, with a minimum commitment of programming resources.

The transition to a client/server environment isn't easy. But KnowledgeWare's unique combination of products and expertise can make it possible. And you can do it within budget and staffing constraints.



It no longer matters whether application developers want to deal with a mix of hardware environments. Whether the cause is right sizing, a merger, an acquisition or business reorganization, multiple hardware platforms are a fact of life. The only question is, can you build applications with the flexibility to be deployed on all your current, and possible future, target environments?

You can if you include KnowledgeWare in your business plan. Our Application Development Workbench has grown to lead the market through the strength of its planning, analysis, design and code generation components for a full range of target platforms. And we will soon be adding Ada and UNIX® support.

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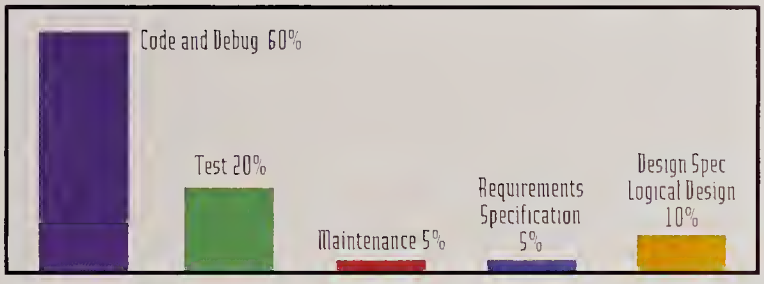
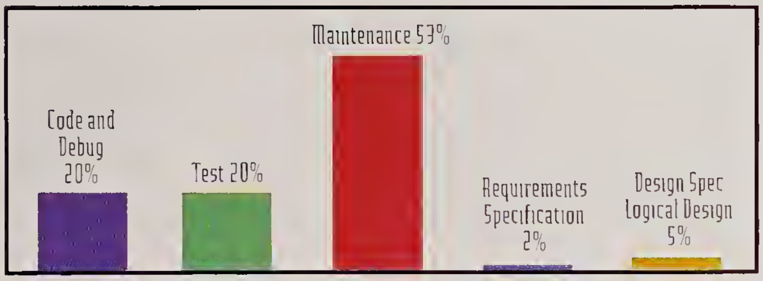
How developers think they spend their time.



How developers actually spend their time.



Source: Pittiglio Rabin Todd & McGrath, management/consultants, **Electronic Business,** June 1992

ADW/Pinpoint documents the code, charts processing paths, and highlights potential trouble spots. And ADW/Recoder dramatically improves program quality by automatically restructuring problem code.

Many IS departments are also being asked for state-of-the-art user interfaces. KnowledgeWare's Flashpoint allows you to add graphical user interfaces to existing COBOL applications. Quickly and easily. This Windows™-based development tool makes your existing inventory of mainframe and midrange programs more accessible to users and much more efficient. Flashpoint is an excellent step toward client/server technology.

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KnowledgeWare is the industry's premier provider of powerful integrated CASE development tools and superior point solutions for GUI development, maintenance, code restructuring and business system planning. These products represent the most comprehensive solution to enterprise information management challenges available.

But technology by itself cannot deliver a total solution for the needs of business today. That's why we back this product offering with complete and sophisticated consulting, training and support services.

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We help you carefully analyze your real-world business requirements. Then recommend the exact mix of technology and training to get the job done as quickly and efficiently as possible. Our experts understand our products. And, more importantly, how they apply to the challenges you face every day.

KnowledgeWare offers training classes throughout the United States. And we can bring our expertise to your site when that is more convenient.

Our orientation is strictly customer-driven. We make every effort to understand and work within your business environment. We measure our success by your success.

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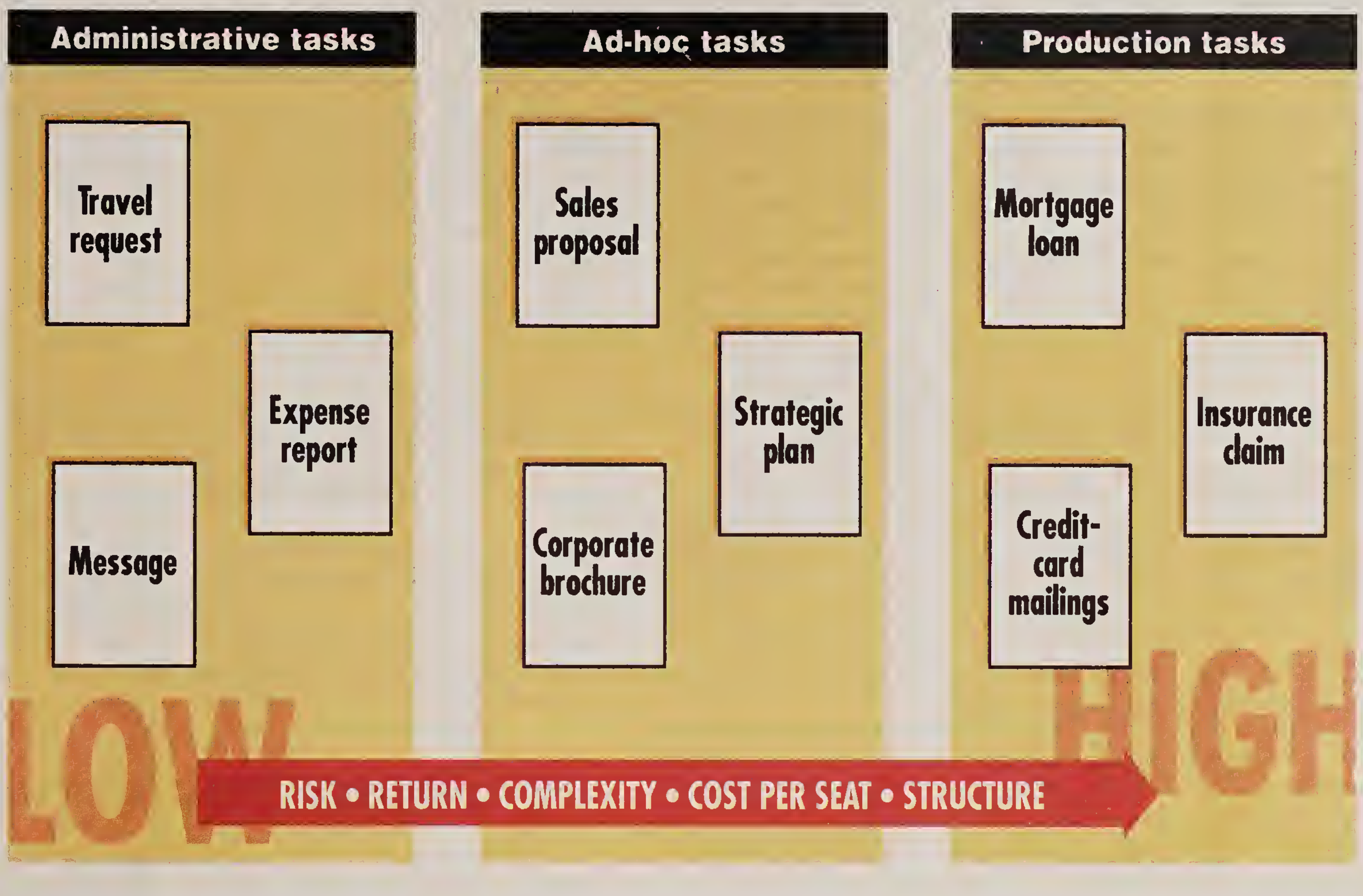
PRODUCT SPOTLIGHT

There's more than one kind of work-flow software



BY SCOTT C. McCREADY

In these days of fiscal conservatism, limited information systems resources and questionable financial returns on IS investments of the past, you're probably wondering, "Why should I care about work-flow software?" You may even be wondering what the heck it is. It might be best to explore what work-flow software is *not*; with "work-flow" reaching the same popularity level as "re-engineering," definitions are getting vaguer and more diverse.

Some vendors say work-flow software allows you to route work from one person to the next, a capability known as "programmic control." A popular example is a travel request form that is electronically and automatically routed through the approval process. The benefits include reduced delay of in-baskets and the fact that workers can stop worrying about where the work should go next or where it has been before.

This definition is partially true, but work-flow software is much more than simply routing work from one desk to the next in a rational manner. It also involves a development environment that allows you to detail a series of events and triggers for any structured or unstructured business process.

In fact, the hard part of implementing a work-flow system tends to focus more on the operations that take place once a case is being worked on at any one desk. This generally has much more to do with forms, user interaction and procedural development than the flow of work.

You can actually learn a lot about work flow by looking at what the imaging vendors have done in this area, although work flow and imaging do not necessarily go hand in hand.

Imaging origins

Imaging was the first technology to make people see the irrationality and inefficiency of some of their business processes. Implementors realized they needed a product that could make proposed changes in the way electronic — rather than paper — documents flowed.

It wasn't long before these companies realized that the people who best understood the business process were in user departments, not in IS. They then wanted a development environment that end users could interact with.

The idea of processing electronic images, or documents, in parallel rather than the old serial, paper-based process fostered the need for placing the flow of work under programmic control.

The imaging vendors, such as **FileNet Corp.**, **Sigma Systems, Inc.** and **Plexus Software, Inc.**, realized that today's development environments were simply too low level for those types of requirements. Consequently, they developed higher level development environments that are critical to work-flow software.

Continued on page 86

McCready is a principal at IDC/Avante Technology, a market research firm in Framingham, Mass. The company recently completed a four-part report on work-flow software, "Work-flow software: The challenge for the '90s."

Work-flow software

CONTINUED FROM PAGE 85

Given enough time and money, C, Cobol or even PL/1 can do exactly the same as work-flow software. But they are not optimal for the following reasons:

- The business process is typically owned by the line-of-business manager, who must convey a detailed understanding of the flow of work to the person ultimately responsible for development. Commonly, something gets lost in the communication, and the development process becomes iterative and lengthy.
- By hard-coding the application every time there is a change in procedure or in business needs, IS has the burden of making application updates.
- Current development tools require processes to be specifically defined and capable of being reduced to an algorithm. Many business processes are not easily defined.

> WORK-FLOW software can be used to automate any application, from processing expense forms to underwriting insurance policies.

Work-flow software, which is typically a fourth-generation language (4GL) environment, is the first software to lend itself to undefinable business processes. It also normally has a good forms capability associated with it. Unlike older languages that require you to specify "edit," "debug" and "test" phases, work-flow software allows you to run and test and change the application all at the same time.

Three types

Work-flow software can be used to automate any application, from processing expense forms to underwriting insurance policies. Certainly you can use it for mortgage loan processing, putting together a sales proposal or product documentation. Some companies are even using it to distribute software.

But don't believe any vendor that claims its work-flow software can automate *all* your business processes and place them under programmic control. That is a hyperbole: While current offerings may be able to automate all your applications across the board, they probably cannot automate any of them particularly well.

That's because the applications in your business have very different work flows based on, among many other factors, the volume of transactions involved and the number of people involved in the process.

The differentiating factors are numerous, but in our research, we've found that there are only two key ones that determine the type of application you're working with and, therefore, which kind of product you should select: the complexity of the business process and how structured or unstructured the business process is.

We believe there are three categories of work flows and three flavors of work-flow software to serve them (see stories this page):

- Production work-flow environments, which are both very structured and very complex.
- Ad-hoc work flows, which are less structured and less complex.
- Administrative processes, which are unstructured and not at all complex.

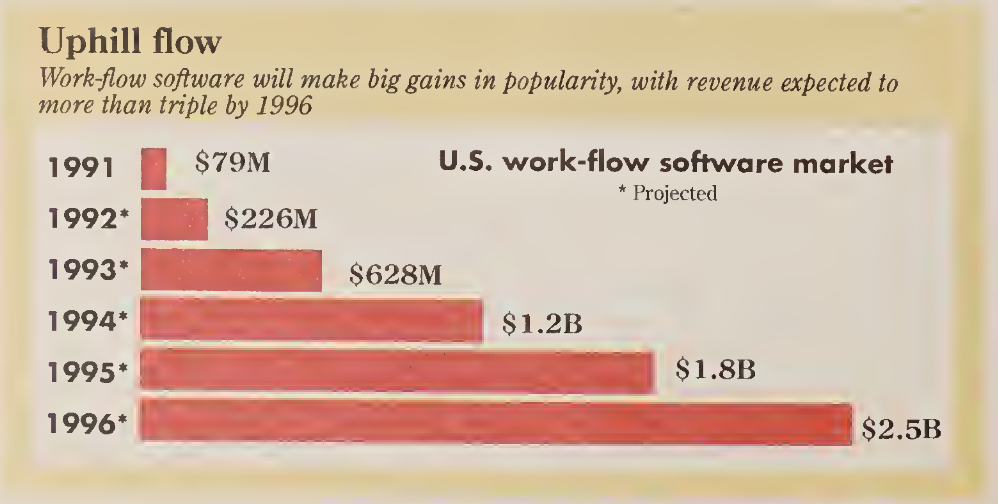
Each requires different things of a work-flow software product, especially in the development environment, whether it's an easy-to-use graphical user interface-based environment or a document management capability.

Big interest

So why the sudden interest in work-flow software? First of all, it is not so sudden: Work-flow software in its current form has been around since 1985.

But it is only more recently that companies have become aware of the business benefits: reduced costs, higher quality and faster service, increased capacity utilization, better use of information, increased management control, organizational flexibility, differentiation in the marketplace and work elimination.

In terms that IS can appreciate, work-flow software can reduce the application backlog, minimize user requests for minor application changes and, at the same time, give you a voice in the business of your company. It won't necessarily get IS out of the development process, but it will provide a suitable environment for IS and users to co-develop work-flow applications rapidly. Plus, it will allow the user to maintain the application over time, freeing IS resources for new development efforts. Like any new market, work flow will continue to evolve. But even now, there are a few very good products that are allowing companies to get started implementing right away.•


Uphill flow

Work-flow software will make big gains in popularity, with revenue expected to more than triple by 1996

Source: IDC/Avante Technology

CW Chart: Janell Genovese

Ad-hoc work flow

There are activities within all corporations that defy definition and thereby limit the use of policies and procedures to govern their outcome. Some examples include developing a strategic plan, reviewing a new product design or simply developing a new corporate brochure.

Certainly, all these tasks involve an identifiable group of people, but this is a *project* environment as opposed to a business *process* that continues day in and day out.

Today, most people use spreadsheets, word processors and document managers to complete this type of work. What's missing is an overall method of managing the project. Therefore, in its simplest form, work-flow software in this case adds a layer of coordination over and above the familiar productivity tools.

In its final form, it also provides some discipline in the form of a time — or deadline — factor and a satisfaction or acceptance factor. That way, each individual on the project knows what effect lateness will have on himself and the rest of the team.

These aspects — time and satisfaction factors — are missing in conventional groupware offerings such as **Lotus Development Corp.**'s Notes. However, Lotus does plan to add Action Buttons and Periodic Macros and improve the formula language, which will make Notes a suitable work-flow platform.

In fact, Notes has a good opportunity to define the ad-hoc work-flow software category.

Bear in mind that workers involved in ad-hoc work flows are normally white collar, and although PCs and local-area networks may be in place, they do not have an extensive information systems structure in many cases.

Add the fact that we are automating a project that may last only a matter of weeks, and one can quickly understand the need for a graphical user interface development environment.

Because the final product in ad-hoc applications is a document, you also need excellent document management capabilities. The software should also be based on a client/server, not a front-end database so that you can replicate the database from one group of people to another.

VITAL STAT

Business process:
Ad hoc, project-oriented.

Development process:
Little IS support.

Environment:
Version control.

Users:
White collar.

Integration:
Desktop interoperability, ability to access foreign databases, host.

Software attributes:
GUI development environment, client/server-based, document management-oriented.

Production procedures

Production work-flow software is used in highly structured and complex business processes that are governed by a series of explicit policies and procedures. Examples include mortgage loan processing, insurance underwriting, claims processing and credit-card correspondence.

The established policies and procedures allow the activity to occur in a manner of acceptable business risk and return. There are some other common characteristics:

- There is a financial exposure associated with the transaction; therefore, an audit trail and financial balancing procedures are required.
- The process is often driven by parties external to the organization, such as consumers, in the case of mortgage loans. A paper form is often used as the data collection metaphor — hence the early success of image-related work-flow software in these types of functions.
- Because these applications are complex, you need a robust development environment rather than a GUI-oriented one. Since they will generally be built and maintained by traditional developers, they can require extensive 4GL programming.

For this type of application, look for the following:

- A robust environment that will enable you to determine whether a transaction took place, when it took place and where it stands now.
- Rollback or recovery processes.
- The ability to queue documents on a variety of criteria.

VITAL STAT

Business process:
Highly structured, repetitive, formal.

Development process:
IS involvement is justified.

Environment:
Transaction-based.

Users:
Clerical.

Integration required:
Desktop interoperability, ability to access host.

Software attributes:
Imaging, RDBMS-based, audit trail, financial balancing.

What is and is not

Like re-engineering, work-flow software has its own set of misconceptions and exaggerations

MYTH: Imaging is, by default, part of any work-flow solution.
There is an image component to some applications, but work flows by their very nature do not require images to be present.

MYTH: Work-flow software is merely the process of routing work from one desk to the next.
It actually has much more to do with forms, user interaction and procedural development.

MYTH: One work-flow product can automate all business processes.
Beware the vendor that tells you that its product can automate all business processes. Chances are it can, but it probably will not automate any of them particularly well.

MYTH: Work-flow software does things that are unachievable with conventional languages.
Given enough time and money, C, Cobol and even PL/1 can do exactly the same things as work-flow software. The trouble is, they assume that a process can be reduced to an algorithm, which most business processes cannot.

Source: IDC/Avante Technology

CW Chart: Janell Genovese

Administrative processes

Administrative business processes are normally simple and somewhat unstructured. Examples include expense form processing and travel requests. These may not be killer applications, but they are simple and cheap to automate.

The best software in this case is electronic-mail-based, with no robust database management system environment.

To the traditional E-mail environment, work-flow software adds the following:

- A consistent user interface.
- Application connectivity, assuming the work-flow environment provides a user interface that inherently has some form of data exchange facility.
- Folder management to allow some degree of structure to exist.
- Forms-based routing.

Some vendors claim that E-mail as a base architecture is not the way to go because it's not robust enough. Instead, they will try to sell you a "de-tuned" ad hoc or, worse yet, production offering.

I strongly believe E-mail is the way to go in this area. For one, it offers a degree of scalability that is not possible in a DBMS-based product. Secondly, administration work flows are simple and can be developed most rapidly using a forms-based environment.

The cost per seat in an E-mail environment should be $300 to $500, which is not feasible with a DBMS-based product.

Finally, using E-mail leverages an existing environment, and the support structure is already there.

VITAL STAT

Business process: Routine, administration, less complex.

Development process: Traditional E-mail environment.

Environment: Forms-based.

Users: White collar and clerical.

Integration: Attach image to E-mail packet, support popular E-mail environments.

Software attributes: E-mail-oriented, forms-based.

Who's who in work flow

Diversity is the name of this game

At last count, there were 26 vendors of existing work-flow software and 53 vendors with products in development. What is striking about these vendors is their widely diverse origins.

Systems vendors

The systems vendors, including **IBM**, **NCR Corp.**, **Wang Laboratories, Inc.** and **Digital Equipment Corp.**, are beginning to get very serious about this market. Beware the system vendor that is simply content to sell third-party software that runs on its hardware.

Imaging vendors

Many of the image vendors have been early proponents of work-flow software. **FileNet Corp.**, **Plexus Software, Inc.** and companies such as **Sigma Systems, Inc.** have substantial offerings. Beware: Almost all of the imaging companies claim to have work-flow software, but much of that software has only simple routing capabilities.

PC software vendors

Certainly, the PC software vendors will get into this market, including **Lotus Development Corp.**, **Borland International, Inc.** and **Microsoft Corp.** Although Lotus' Notes has many of the elements a work-flow product requires for the ad-hoc area, it has no work-flow capabilities right now, although I believe these will be in a future release. Its early start does give Lotus the opportunity to define this market segment, however. Borland has some exciting development occurring in Paris, while Microsoft will announce an administrative product by year's end. Windows for Workgroups is a good base platform for the ad-hoc area.

You've got to be wary about the PC software vendors, however. They are staging a winner-take-all price war for their traditional products, which makes it tempting for them to intimate a great development in the works for work-flow software to effectively freeze the market. Make sure you know what is real before signing on for anything.

Work-flow-only vendors

There are also companies solely in the business of developing work-flow software. These companies are typically less tied to the underlying hardware, which is key for a companywide implementation. Understand that some of these companies do not sell to users but instead sell their products as the back-end services to third parties, such as **Action Technologies** licensing to **Da Vinci Systems, Inc.** Other work-flow vendors include **Reach Software Corp.**, **Saros Corp**, **Computron Technologies Corp.**, **Workflow Systems, Inc.** and **Sunrise Software Systems, Inc.**

E-mail vendors

Lastly, the E-mail vendors are seeing the necessity to offer work-flow products. **DEC** has already announced TeamLinks; **Verimation, Inc.** has a deal with Action Technologies; and the next version of **Hewlett-Packard Co.**'s Open Mail will have work-flow facilities.

AND ANOTHER THING . . .

By the end of 1992, all computer systems suppliers whose products are used in the office will have added a work-flow capability to their products, according to Ovum Ltd., a London-based research company.

Three types of work-flow software

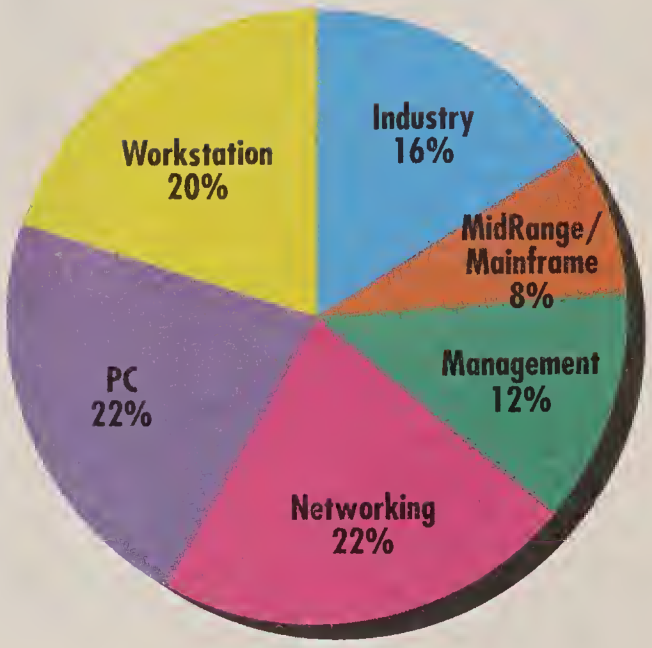
Production	Ad hoc	Administrative
FileNet Corp. Workflo Business System Costa Mesa, Calif.	**Keyfile Corp.** Koala Nashua, N.H.	**Reach Software Corp.** MailMan Alameda, Calif.
Plexus Software, Inc. FloWare Dallas	***Lotus Development Corp.** Notes Cambridge, Mass.	***Action Technologies** (Unreleased) Alameda, Calif.
Sigma Imaging Systems, Inc. RouteBuilder New York	***Action Technologies** (Unreleased) Alameda, Calif.	***Beyond, Inc.** Cambridge, Mass.
Computron Technologies Corp. EPIC Rutherford, N.J.	**Portfolio Technologies** Walnut Creek, Calif.	**Digital Equipment Corp.** Teamlinks Maynard, Mass.
***Microsoft Corp.** (Unreleased) Redmond, Wash.	***Microsoft Corp.** (Unreleased) Redmond, Wash.	***Microsoft Corp.** (Unreleased) Redmond, Wash.
IBM FEF, WAF, Workflow Builder White Plains, N.Y.	***IBM** (Unreleased) White Plains, N.Y.	***IBM** (Unreleased) White Plains, N.Y.
NCR Corp. Process IT Columbus, S.C.	***NCR Corp.** (Unreleased) Dayton, Ohio	***Da Vinci Systems Corp.** (Unreleased) Raleigh, N.C.
Information Management Consultants, Inc. Image Mover Vienna, Va.	***Borland International, Inc.** (Unreleased) Paris	***Verimation, Inc.** (Unreleased) Rockleigh, N.J.
Image Business Systems, Inc. New York, N.Y.		***Hewlett-Packard Co.** Caspian Pinewood, UK
Unisys Corp. Event Manager Blue Bell, Pa.		
Wang Laboratories, Inc. Computron's EPIC, IMC's Image Mover Lowell, Mass.		
ViewStar Corp. Berkeley, Calif.		
Digital Equipment Corp. Echo Holland		

* In development

Source: IDC/Avante Technology

CW Chart: Janell Genovese

HOW DO WE KEEP



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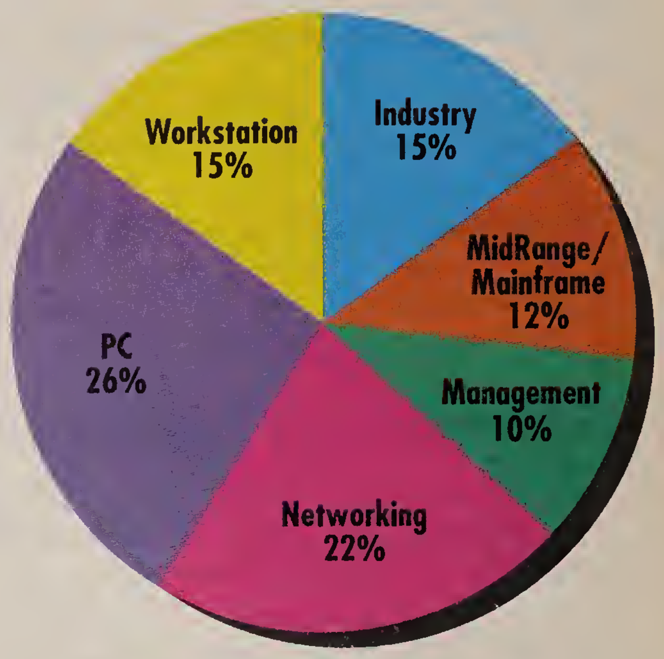

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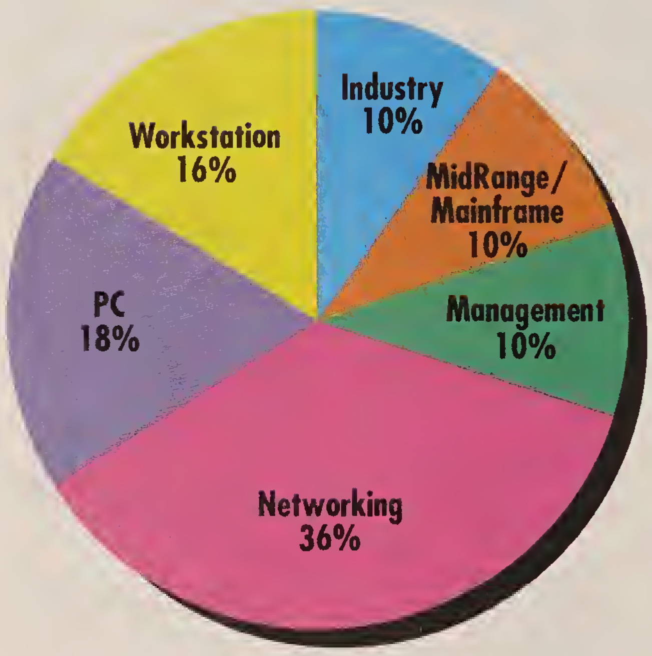

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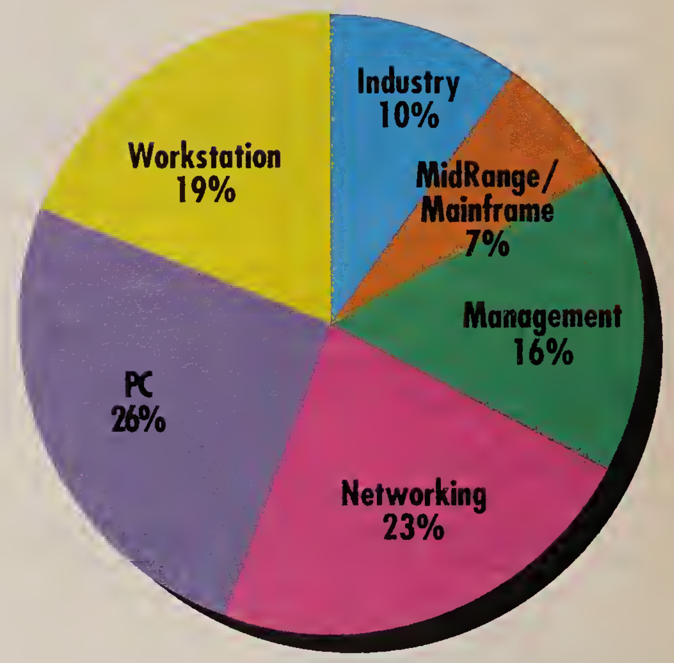

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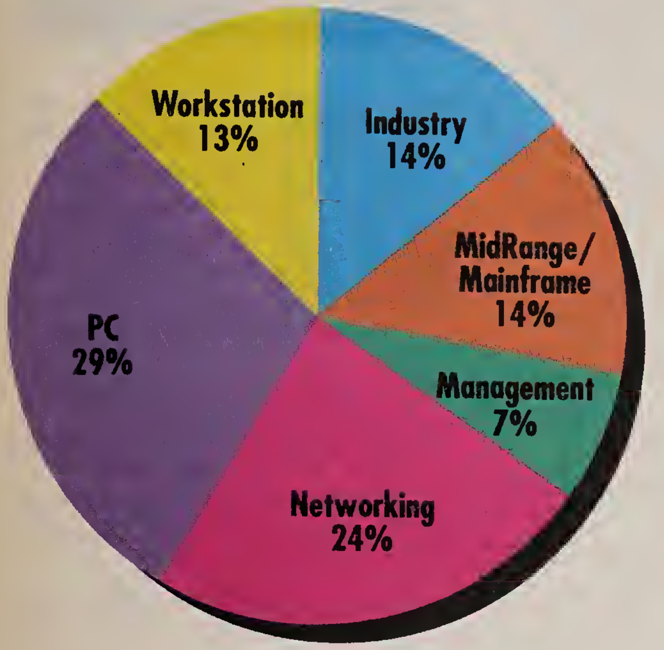

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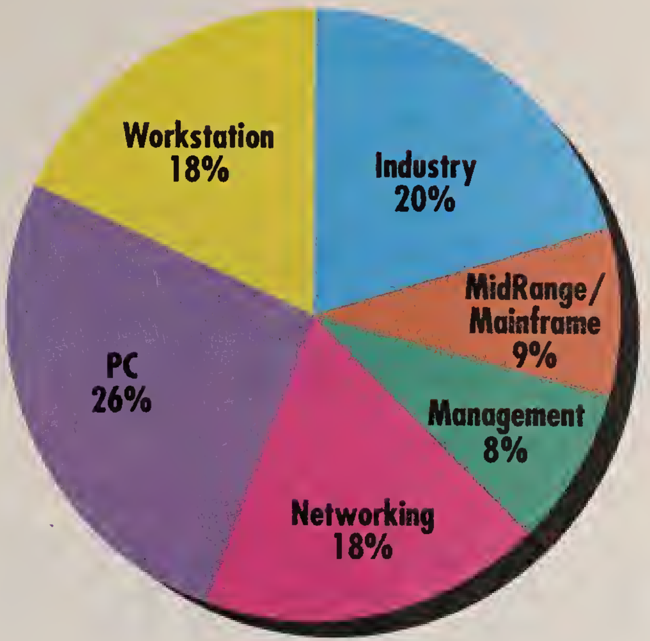

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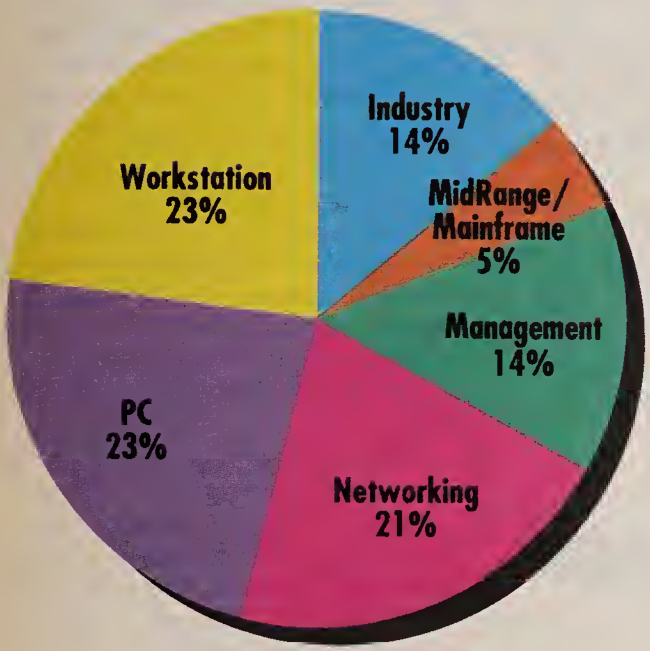

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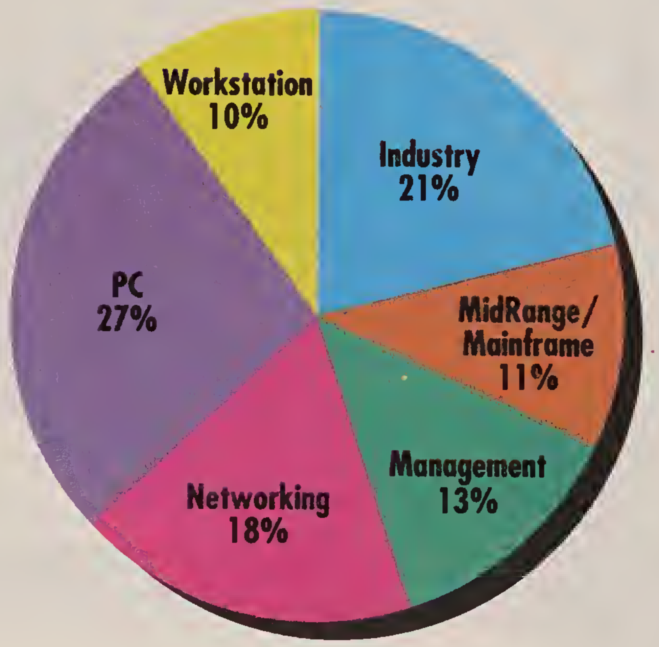

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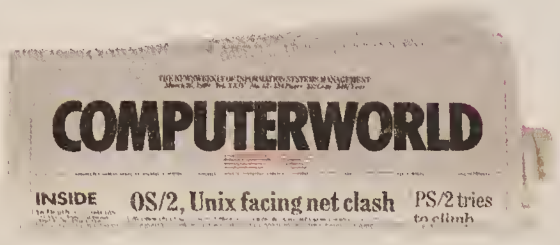

The Newspaper of IS

Getting started . . .

So where do you start on your work-flow implementation? That depends on what kind of risk you're willing to take. If your company is risk-averse, administrative work flow is the best place to start, especially since the financial investment is relatively minor.

One danger with this approach is that early and relatively easy success in this area could lead to unrealistic time and financial expectations as you move into the more complex activities, such as ad-hoc and production work flow.

Starting with production work-flow software environments will provide the highest level of financial return, but it will also require the greatest change and financial investment. On the bright side, you will learn a great deal that is immediately transferrable to the ad-hoc and administrative areas of your company.

Bear in mind that your choice at this time is likely to depend on which vendor you choose, since no one vendor has a work-flow software product for all three environments. Therefore, adopting work-flow software requires a number of decisions:

- Do you select a best-of-breed vendor for each of the three areas?
- Do you select a vendor based on feature/function capability?
- Do you select a vendor based on hardware platforms supported?
- Do you select a vendor that is committed to having products for all three types of work-flow software environments?
- Is there a need for integration between production work flows, ad-hoc environments and administrative functions? If so, what is an adequate level of integration: file-exchange services or folder-level integration?

The consensus seems to be to get an early win, show management the benefits and then begin to formulate a companywide approach. Trying to answer all the questions up front tends to leave users in a "paralysis by analysis" mode; however, keep these questions in the back of your mind at all times.

SCOTT C. McCREADY

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"If we buy work-flow software, it will be to distribute updates and releases of software to 20,000 PCs in the company. Our update crews who do installation never stop.

"Reach's product could be the engine for that distribution."

User: *Art Beckman, manager of information technology services, Pacific Gas & Electric Co., San Francisco.*

Possible purchase: *Reach Software Corp.'s MailMan.*

"We were facing the need to invest in microfilm or microfiche technology for storage, disaster recovery and document retrieval. It made sense for us to leapfrog microfilm tech into imaging because imaging provides the benefits associated with work flow, such as simultaneous retrieval of documents by multiple users and improved reporting and inventory tracking.

"It was relatively easy to cost-justify because the company was already committed to buying something, and we showed significant staffing and [photocopying] savings, as well as soft-dollar value savings.

"We will pay off our $1.5 million investment in savings in $2\frac{1}{2}$ years."

User: *Arthur Southam, chief operating officer, CareAmerica Health Plans, Chatsworth, Calif.*

Product selected: *FileNet Corp.'s Workflo Business System.*

"We were consolidating lending and deposits into one location, and work flow let us connect mainframes from across the country in one workstation and do imaging. We can use regular fax machines and send images that appear at other locations as though they were created there. These documents are then automatically routed to the next workstation.

"We can also look at every document that accompanies that image and see how a decision was made. Now you can come to us and get a car loan that used to take all day to process. Now it can be processed in less than an hour and a half."

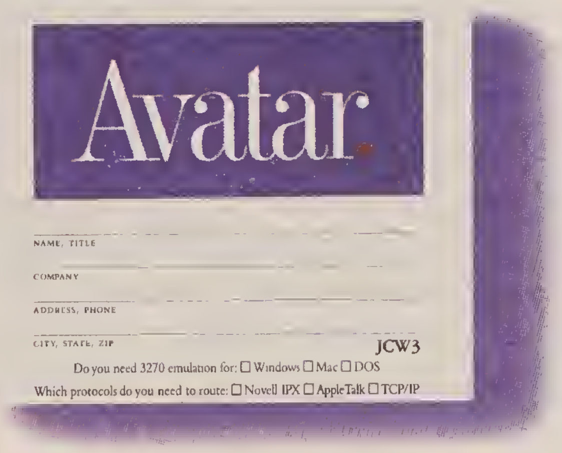
User: *Allen Cournyer, senior vice president in charge of data center operations, Texas Commerce Bancshares, Houston.*

Product selected: *ViewStar Corp.'s WorkBench.*

Reported by Alice Bredin, a free-lance writer in New York.

(What is it?)

It's an SNA gateway. (That's nothing new.) **It's also a local router.** (Excuse me?) **It's an SNA gateway *and* a local router** (You mean in one product?) **in one product. So it provides you with two solutions in one:** (Let me guess; the functionality of a gateway along with the performance of a router.) **the functionality of a gateway combined with the high-performance of our router's SPARC processor.** (I was close.) **Since this new product** (I think it should be called a gateway-router.) **performs two functions at once, it offers unprecedented levels of administrative convenience and manageability.** (But does it access multiple LANs?) **It also accesses multiple LANs, including Token-Ring, Ethernet, and LocalTalk,** (Ask a stupid question...) **and supports mixed PC environments such as Windows, Mac, and DOS.** (Holy Toledo.) **Naturally, our Netway gateway-router** (Hey, that's *my* name for it.) **can route Novell IPX and AppleTalk protocols,** (And?) **and comes complete with powerful 3270 services like terminal and printer emulation.** (I wonder who came up with this thing.) **As you might have guessed by now, the company behind this revolutionary product is Avatar,** (I should have known.) **leaders in SNA connectivity for over a decade.** (Must be about time for the obligatory 800 number.) **For more information, and our free "Gateway-Router Guide to Network Manageability," send in the coupon or call 1-800-AVA-3270.** (A free gateway-router guide? You must have read my mind.)



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Any Rock Star Missing From This Event Had Other Plans.

LAS VEGAS, NV (MGX) – Anybody not playing "the event" of **COMDEX 1992** obviously had plans they couldn't change. Because this concert will be remembered as the year that Hollywood and Silicon Valley converged in a spectacular fusion of entertainment and technology. Presented by **Micrografx** and produced by the **Walt Tucker Group**, the **Grand Scientific Musical Theater** combines great performers with the future of modern production. This event sets the standard for multimedia entertainment. Best of all, the proceeds will go to the National Center For Missing & Exploited Children (NCMEC).

VEGAS TO HOST MULTIMEDIA SPECTACLE!

Recent additions to the cast include **Alan Parsons**, creator of the Alan Parsons Project and engineer of **Pink Floyd's** *The Dark Side of the Moon*, and **John Entwistle** of The Who. With **JBL** building a custom system, combined with 3D Virtual Audio, it'll sound like nothing you've ever heard before! On top of that, add a house band with members of **Steely Dan, Pink Floyd, Tower of Power** and the **Traveling Wilburys**. Then sprinkle in an assortment of headline performers. (You have to show up to find out who. But you won't be disappointed.) And for good measure, throw in leaders of technology such as **IBM, Silicon Graphics** and **Pacific Data Images (PDI)** to create the visual experience. If that doesn't sound like a recipe for audio and video nirvana, then nothing will!

To make sure you don't miss out on this incredible extravaganza, get your tickets as soon as possible. For advance tickets, call **(703) 516-6158**. Or come by booth **#7062** at the **Las Vegas Convention Center** during COMDEX. If you don't get them there, you might be able to buy them the night of the event. But don't count on it. Because with a line-up like this one and a price of only $50, tickets will be mighty scarce. Remember, almost anyone could be performing. Well, except the guy with the sideburns. He was busy.

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Innovation has always been at the heart of the computer industry. On the next couple pages, we'd like to introduce you to the scientists driving the breakthrough thinking in vendor companies. What they're working on today is shaping what you'll buy tomorrow.

Philip M. Neches

NCR

Don't call Philip M. Neches a head-in-the-clouds scientist. NCR Corp.'s senior vice president, chief scientist and executive committee member takes pride in blending his technical know-how with sensitivity to business imperatives. He brought both these skills to bear in 1979, when he founded Pasadena, Calif.-based Teradata Corp. and developed the DBC/1012, a massively parallel database server. Neches joined Dayton, Ohio-based NCR in 1989, and two years later, NCR acquired Teradata. (1991 was a busy year for NCR; it was also the year AT&T acquired the company for $7.5 billion.)

Neches holds bachelor's and master's degrees in engineering from the California Institute of Technology; he returned to Cal Tech and received his Ph.D. in computer science in 1983. For his graduate work, Neches focused on parallel computing architectures and data management and quips that he formed Teradata afterward "because I didn't want to be accused of not implementing my thesis."

CW: Why is head-in-the-clouds research wrong-headed?
PN: Increasingly, your hit rate is low. It's [incumbent] upon us to get out there. And then, when you go back [to the labs], you go back with a much better understanding.

CW: What are you working on now at NCR?
PN: I'm working on the top-of-the-line family of open, microcomputer-based cooperative computing systems.

CW: Will the NCR System 3700 be a massively parallel processor (MPP)?
PN: We're going after the commercial marketplace first, where the major applications are reports and on-line transactions. So we've learned how to push parallelism into the systems software.

CW: What's the benefit of MPP in commercial settings?
PN: If you let a business get its full set of detailed information on-line, it lets people re-engineer key business processes. Companies like AT&T, Wal-Mart, Kmart and Citibank have been doing this with this kind of equipment. But these customers tell us the applications are so critical to the way they run businesses, they don't want to discuss the details.

CW: No details?
PN: Well, Wal-Mart has the most powerful commercial retail system anywhere on the planet. They have something approaching 10,000 VAX MIPS in one system image, using a massively parallel scheme.

CW: What about future research?
PN: One exciting thing resulting from the AT&T/NCR merger is [working closely with Bell Laboratories].

One area that will have immediate impact is compression technology, which is key to bringing multimedia to market. Wireless is another area of collaboration, specifically fundamental technologies for digital wireless technologies.

INSIDE

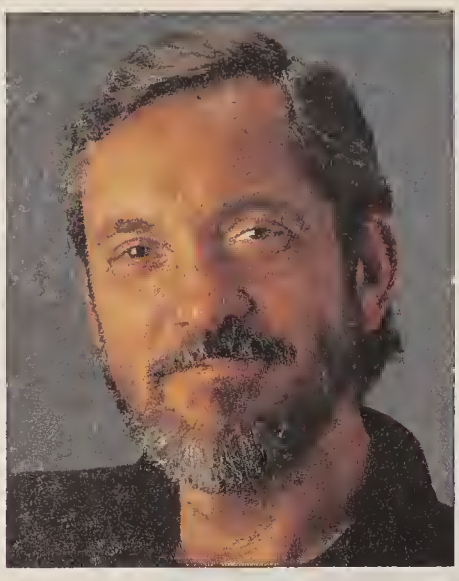
Dave Nagel, Apple
Michael Deering, Sun
Pallab Chatterjee, TI
Drew Major, Novell
Phaedon Avouris, IBM

CW: How are customers faring?
PN: My perception is that customers are way ahead of the vendors. Think about it: The computer business is 30 years old; people who are entering business have been educated on computers. Even people rising to senior positions have lived in the Computer Age.

CW: What's the next step in computing technology?
PN: To handle other forms of information digitally: voice, motion video and so on. The key news is that in the last few years, these applications that have been dreamed about are now technically demonstrable. The next threshold is [making them] cost-effective.

If you look into the 21st century, you see a change from electronic to photonic information systems. When we were graduate students, the hot processor was the Intel Corp. 8080, and the 8085 was just coming out. This was state of the art, with 6,500 transistors [on a chip]. We were asking then about what to do with one million or 10 million transistors ... and here we are.

Interview by Ellis Booker, Midwest bureau chief.



David C. Nagel

Apple

Dave Nagel is an impatient man. He'd rather invent the future than wait for it to arrive.

As senior vice president at Apple Computer, Inc.'s Advanced Technology Group, he often gets that chance. Apple's 1984 introduction of the Macintosh PC was pivotal in making the PC the ubiquitous item it is today.

Nagel is no stranger to such startling leaps of technology. For 17 years, he served as a research scientist and head of the Aerospace Human Factors Research Division at NASA Ames Research Center in Sunnyvale, Calif. While there, he worked on an early project that explored the concept of virtual reality. His team also did research on computer graphics.

If anyone could follow up the masterstroke of the Macintosh, it's Nagel. His technical schooling is certainly unimpeachable, with undergraduate and graduate degrees in engineering from the University of California at Los Angeles.

Perhaps more importantly, he owns something few other leading scientists do: a Ph.D. in experimental psychology. Nagel knows not only how to build technically complex objects but also how people will approach and use these objects.

CW: What are your chief responsibilities at Apple?

DN: My job is to make sure that the capabilities of our machines are greater than ever, while making them even easier to use. If I'm doing my job right, the user won't even notice our work.

CW: What technologies are you working on to facilitate that?

DN: Mostly research into wireless communications. We've got a project in the works that will provide wireless networking at 10M to 20M bit/sec. data transfer. Soon we'll see the proliferation of mobile products about the size of [a small] tape recorder. The last thing you want is a cable stretching out the back to plug into the wall.

So wireless technology is very important.

CW: How far away is the widespread use of such technology?

DN: I think you will probably see commercial products in the next year or two. It would foster what we call "spontaneous networking." Several users would be able to walk into a room, turn on their PCs and start transferring all sorts of data immediately. Each PC would be able to send and receive the data, eliminating the need for a network administrator.

Another interesting thing about it is the distance we could transfer data: up to 150 feet. That includes going though doors and walls. And the signal wouldn't require much power. Typical operating power would be less than one watt, possibly as low as one-tenth of a watt.

In fact, Motorola and other companies are already beginning to deliver those kinds of products, but they generally are low data-rate products. We are very interested in very high-speed, multimegabits per second kinds of products.

CW: Why high speeds?

DN: One of the trends is multimedia — computing pictures and video and sound and so forth. Those represent a much richer type of information than simple text, which typically is for messaging and cellular data transmission.

So if you're going to be shipping pictures around from one system to another, you don't need 10K bit/sec. capability; you need million bit per second kinds of speeds. High speed is where a great deal of promise is.

CW: How has work in handwriting recognition been progressing?

DN: Well, there are problems. Systems that recognize printed characters work pretty well today. The challenge in handwriting is to recognize the sort of handwriting that you are doing, which often is a mixture of printed characters, cursive characters and things that aren't classifiable.

It's not until you get this more general capability that you will throw away your notebook and use one of our systems.

Interview by James Daly, senior West Coast correspondent.

Pallab K. Chatterjee

TI

When Pallab K. Chatterjee came to Texas Instruments, Inc. in Dallas, he had to bridge a language gap. The native of India spoke English well enough, but he had the wrong accent. "They told me I wouldn't make it — I talked funny."

They might have questioned his drawl, but no one ever questioned Chatterjee's ability to think. He brought to TI a bachelor's degree in electronics and communications engineering from India as well as a background in solid-state research and master's and doctorate degrees in electrical engineering from the University of Illinois. He went to Illinois for two reasons: The school guaranteed him a full scholarship, and he could study and work with John Bardeen, a revered scientist who had won the Nobel prize twice — for inventing the transistor and for his work on superconductivity.

The 42-year-old Chatterjee is now a respected name in his own right and has

Michael F. Deering

Sun

The third dimension grabbed Michael F. Deering back in high school, when a Scientific American *article on three-dimensional graphics rendering sparked his interest in computer graphics. He began cranking out programs to generate 3-D images with dial-up access to his high school district's IBM 370 mainframe.*

His first summer job was working on a Digital Equipment Corp. GT40 graphics computer at the Smith-Kettlewell Eye Research Institute in San Francisco. The $5.25-an-hour salary from his part-time programming work there helped pay his way to undergraduate and graduate degrees in computer science at the University of California at Berkeley.

A seven-year hitch in Schlumberger Ltd.'s Palo Alto Research facility in California preceded his arrival at Sun Microsystems Computer Corp. (SMCC) in 1988. Deering, 36, is currently senior staff engineer in Sun's virtual reality group.

CW: Has any of your work ended up as a commercial product?

MD: Yes, but only one was a major product: the GT version of the SPARCstation 2, which is our high-end graphics machine.

CW: What sort of work are you doing at Sun?

MD: Aside from the SPARCstation 2GT and SPARCstation 10GT, I've been working on more sophisticated graphics engines and next-generation graphics languages. I've always been interested in not just pure research but putting things out as products.

In our virtual reality research, we're doing a new system based on the SPARCstation 2GT, where we're using a high-resolution CRT screen and head-tracked LCD stereo shutter glasses to put together a Virtual Holographic Workstation prototype.

CW: What kind of uses do you see for virtual reality technology?

MD: Anything where human perception of space is needed, like auto design, molecular modeling, animation design, architectural design. For anything like that, virtual reality at the right price will sell.

Another area where virtual reality will be large is in entertainment, with companies building theme parks. And virtual reality for training is becoming more attractive, like using flight simulation to train pilots.

CW: What are the business uses for virtual reality technology?

MD: Information visualization. There's already people spending a lot looking at how to use virtual reality to present information on markets in a more fluid form. One example I've seen shows dynamically how the stock market works, with pieces of paper representing stocks floating from above and landing on the floor. When those stocks are bought, the piece of paper gets yanked under the floor.

CW: How does Sun's philosophy about advanced research and development and its business enter into the work you do?

MD: A lot of what I do is flying several years ahead of real products, but that's not to say I don't make emergency customer visits when that's important or help out with trade show demos. With virtual reality in particular, those demos are a very good way to show what our hardware and software is capable of.

CW: Are there still technical hurdles to virtual reality?

MD: Yes. For years, we couldn't draw the images fast enough. That's going better now, but we want to improve it.

Another hurdle is tracking: As you move your head, the rest of the virtual reality universe takes a while to catch up to you. It's like the universe on Quaaludes.

But the biggest remaining hurdle is the display. CRTs are not the best way to represent virtual reality. People want a bigger field of view, so we need lightweight displays that can be worn on the head. This would look like a pair of sunglasses.

CW: What are the research directions for virtual reality at Sun?

MD: I can't comment on some of them, but I can say we've had requests from people who want to put a virtual reality system on the factory floor, so a nonexpert can pull up a hologram of what the part is supposed to look like.

CW: How does Sun's R&D group relate to the company's business?

MD: The way we are organized, we have Sun Laboratories, Inc. as a group chartered to support all the operating companies within Sun. They have a little longer term charter than some of the advanced development groups, but they're not the only ones chartered with research.

We also have research going on within the operating companies, which have somewhat shorter term charters. I'm actually working with a particular product group within SMCC.

All of this has to do with technology transfer. Sun is conscious of getting ideas to the market as real products.

Interview by Maryfran Johnson, senior editor, workstations.

become vice president of the corporate staff and director of TI's semiconductor process and design center.

CW: What is your role at TI today?
PC: Right now, my role is sort of a coach and cheerleader, and I do philosophy part of the time. I also play another part — you might call it investment banker: I figure out where to invest our money, in what research.

CW: What kind of research are you investing in today?
PC: I can't really talk about that.

CW: Well, hasn't TI said that it licensed the Cyrix Corp. microprocessor to start integrating more functions onto a chip?
PC: We are in a position to start going toward an entire system on one piece of silicon. The integration of microcontroller functions has a lot of possibilities, for example in the auto industry. The BMW 800 series has 68 processors inside it; we're in a position where the automobile is becoming a sophisticated distributed computing environment.

Almost everything is in a digital format. If you look at the design diagram for a computer and for, say, a stereo, there's not a lot of difference there. The underlying technology is blending.

So we see ourselves in the middle of this huge transition. Why think of it as computers equal workstations, and consumer electronics equal playstations? We feel the underlying technology is not going to be much different.

CW: Has any of your research appeared in actual products?
PC: A whole bunch of things I worked on have made it to market, such as specific [dynamic random-access memory], ASICs and so on. Of course, not everything has. As far as a research lab is concerned, if you get 100% of your projects to market, you're not being aggressive enough. If you're batting 70% or 80%, you're probably doing fine.

CW: What kind of projects are you working on now?
PC: Since 1986, we've been looking at the next generation of manufacturing technology. The biggest crisis facing the semiconductor industry is to address manufacturing costs.

In 1984, we spent $100 million on a [chip fabrication plant], and management said, "We're not going to do that again." So they put us on a project to look at what the next generation of manufacturing was going to look like, and we came back and said, "You're right, you're not going to spend $100 million; you'll spend a lot more." And they almost fired the lot of us.

After they calmed down a bit, they said, "Alright, if you're worth your salt, go solve some of this process problem."

We've discovered that 75% of the cost of a fabrication plant is equipment, and there was no reuse of anything; there is very little modularity in the system. So the first thing we went after was modularity, and we've designed a flexible, object-oriented factory system that controls the scheduling process.

We're on schedule to demonstrate a factory working on that principle in January. Where the average factory runs on 35% to 40% utilization, we think we'll get 70% with this system.

Interview by Michael Fitzgerald, senior writer.

Phaedon Avouris

IBM

Phaedon Avouris was supposed to be a physicist but for "a silly mistake": He and a friend got lost on their way to a university physics entrance exam in his native Greece. "I had to settle for chemistry," says Avouris, who received an undergraduate degree in chemistry from the University of Thessaloniki in Greece. He also has a Ph.D. in physical chemistry from Michigan State University.

His mistake was a stroke of luck for IBM. Today, Avouris is manager of the Chemical Physics of Surfaces Group, a branch of materials research at IBM's Thomas J. Watson Research Laboratory in Yorktown Heights, N.Y. The Watson research facility, with more than 2,400 employees, is by far the largest of the five IBM research laboratories.

The soft-spoken 45-year-old received an internal IBM award several years back for inventing new ways of working with a special microscope to create atomic structures. These structures could someday be used to create extremely tiny electronic circuits that are 1,000 times smaller than today's comparable devices. This would allow faster and less expensive computers. The trick is learning how to work with devices that small; this is the area on which Avouris is concentrating.

CW: What kind of work are you doing now?
PA: We're using the scanning-tunneling microscope, which basically has a very sharp tip, to move atoms of silicon around. We can move and remove atoms with a high degree of precision. We're trying to understand how to do this movement — how to break the chemical bonds and the properties of the structures we make with the atoms once they are moved. It's essentially atomic-scale construction.

CW: What's the commercial impact of your work?
PA: IBM's primary interest is nanotechnology: building very small devices, including electronic circuits. These will not be scaled-down versions of the electronic devices of today. The principles will be different, so the devices will have to be as well.

Building any new technology takes time. Once you start building things that small, the properties of materials change dramatically. We have to figure out ways of handling nanodevices and to understand the laws of physics that apply. We're starting to understand these things, to make new structures and study them and then make new devices. But it will take some time.

CW: Were you disappointed that you didn't pursue physics as your field of study?
PA: I don't regret it because it taught me a different mode of thinking. Chemists are a lot more intuitive. They have to be because what they study is very large. Physicists study simple systems, which they analyze qualitatively. In surface chemistry, we think in complex terms. So it prepared me for what I'm doing now. Degrees don't mean much anyway; what counts is what you do in the laboratory.

CW: What attracted you to surface science?
PA: It was a new phenomenon. I read a paper and realized that no one had really looked at how excited states interact with surfaces. It was a whole domain of science that was untouched. A colleague of mine had a tool to help facilitate this, so the two of us paired up and started to look at this. It is still an open field.

Interview by Johanna Ambrosio, senior editor, systems & software.

Drew Major

Novell

When talking about computer technology, Drew Major sounds like the Thoreau of Utah; he is a man focused on making his products "smaller, simpler and faster." As chief scientist at Novell, Inc., Major was part of the three-man team that originally developed the company's NetWare local-area network operating system. A graduate of Brigham Young University with a double major in mathematics and computer science, Major continues to oversee the design and implementation of NetWare.

CW: How did you come up with your original idea for NetWare?
DM: Kyle Powell, Dale Neibauer and I had been doing some consulting work while still in college and kept on after we graduated. In October 1981, a local company called Novell Data Systems hired us to come in and hack CPM so a hard disk could be shared by many users. Our deadline was Comdex — six weeks away!

[Disk sharing technology] was considered hot at the time. Other companies that were doing it were partitioning the hard disk into a number of assigned floppies. We figured that was the easy way to do it, but it was the wrong way.

We thought coming at the problem at a higher level, specifically file sharing rather than disk sharing, would be faster and more efficient.

That wasn't what Novell Data Systems wanted us to do, of course, so we worked on hard disk sharing for them and continued to work on file sharing on our own time.

Our basic concept was, instead of having lots of people time-sharing on one big machine, let's connect lots of little machines and turn them into a system. As soon as we saw the IBM PC, we knew they were the machines we should be linking up.

CW: What are you currently developing?
DM: I spend a lot of time thinking about where NetWare needs to go — specifically, the fully distributed, object-oriented file system.

I'm always trying to make things smaller, simpler, faster — with every revision of NetWare, our core operating system usually gets smaller.

CW: How do you go about tackling tough problems?
DM: Most great solutions are simple and blindingly obvious. Look for the simple way first.

But tough problems like how to do the software for the server-mirroring that we have in our new System Fault Tolerant III product — we worried at that thing for a long time without getting anywhere.

So in 1986, Dale, Kyle and I decided to drive to Las Vegas rather than fly and see if we could talk the thing out during the eight-hour drive. And we did.

Suddenly, somebody said, "Hey, what if we. . . ?" We worked it out on the drive, and the problems just fell away.

CW: How do you envision the networks of the future?
DM: First, we're going to have a global system based on logical, not physical attributes. The software will be much smarter than it is now; it will remember what servers you need, what applications you use, what data you access, then automatically go get the resources and bring them to you wherever you happen to be.

Next, I expect to see fully distributed processing across clients and servers — the "network as system" paradigm. To do that, we're going to need a lot of work done in heuristics, so the system can anticipate growth and change and be scalable. The network is just going to have to get a lot smarter.

Interview by Michele Dostert, West Coast correspondent.

These interviews with leading computer scientists kick off a new series appearing in the Advanced Technology section. Our reporters will on occasion talk with top researchers about their leading-edge work and what their discoveries mean for your business. Look for our Nov. 9 interview with Ravi Sethi, director of the Computing Science Research Center at AT&T Bell Laboratories.

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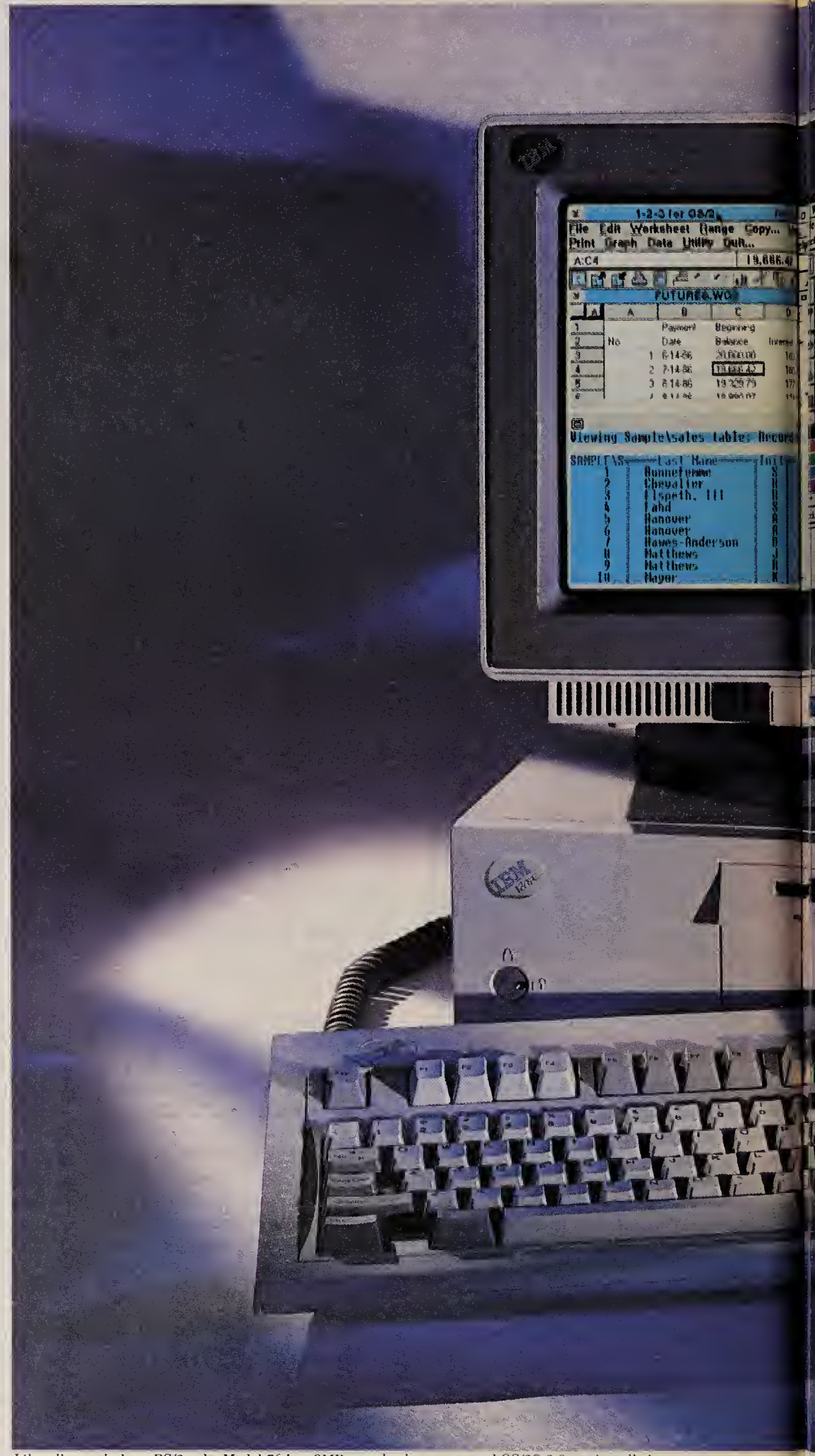
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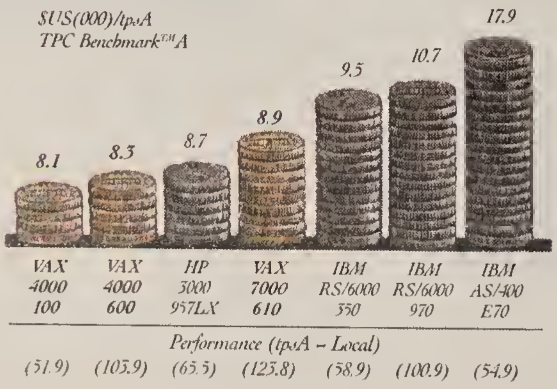

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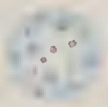
Riding the Software Pricing SKYROCKET

IS heads are dizzy from astronomical software costs. Fed-up companies are climbing off, uniting — and saving money.



Rollin McGrail

BY G. BERTON LATAMORE
and JOSEPH MAGLITTA

There are days when Darrell Ackmann, like thousands around the country, must wonder if a software license hasn't become a license to steal. "A general-ledger package may cost $300,000, and you could spend $3 million implementing it without blinking," says Ackmann, manager of contracts at Motorola, Inc. in Schaumburg, Ill. Increasingly, angry companies are rallying to force a tier-drop that will lower the heartbreaking cost of buying, installing and maintaining software, especially for larger systems and local-area networks.

Although hardware prices have nose-dived in recent years, software costs have risen rapidly. In fact, runaway software spending now represents *the* major budgetary headache for many information systems organizations, most of which are under knuckle-whitening scrutiny from chief executive officers eager to see payoffs from huge technology investments.

Add maintenance fees and "nuisance" charges such as transfer fees (often levied when software is moved from one system to another), and the pain worsens. While suffering and frustration are widespread, IS managers are starting to fight back in the $38 billion software industry:

- Earlier this month, the Society for Information Management (SIM) announced it was making software pricing reform a top priority (see story page 102). In a recent survey, nearly 100% of SIM's membership polled said battling high software costs was crucial.
- Another coalition of 80 large corporate computer users has been meeting two or three times a year to discuss software issues. The SoftWare Asset Management Interest group (SWAMI), which comprises large clients of Gartner Group, Inc., claims to represent 10% to 15% of all U.S. software dollars spent.
- Two weeks ago, a Texas-based organization of leading IS executives lauded Digital Equipment Corp.'s new software-licensing policies. The Profit-Oriented Systems Planning Program gave DEC the first "vendor honor roll" award in its 25-year history.

These groups, as well as efforts by individual companies, reflect the concern and anger many feel over having 1960s software pricing policies drag into the 1990s.

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"Too often, tiered pricing has little relationship to the real value of the software to the user," Ackmann complains. "For instance, we are down to two or three users on one VM application. When we upgraded the system it was running on, the vendor wanted more money. But our use of that application had not changed."

Old approach, new problems

How did software become such a dollar-munching monster? Experts say several reasons underlie the problem.

For starters, each software vendor has its own tier definitions and schedule of charges. Because the typical large information systems group works with as many as 100 suppliers — each with a unique tier schedule — it is impossible for users to track and predict many of the charges. Thus, many data centers are often surprised by unexpected tier-upgrade fees.

Years of neglect when software was inexpensive and hardware was the focus of information technology management has complicated the situation in many shops.

The burgeoning growth of midrange servers and PCs, each with its own expensive software and unique asset-management challenges, has only worsened the problem.

Tiered pricing, never intended for a nonmainframe world, simply does not adequately cover client/server and other new computing models. The reason is simple: In these new approaches, comput-

Continued on page 100

Riding the software pricing skyrocket

CONTINUED FROM PAGE 99

ing loads and some applications may shift from one system to another across the enterprise network.

All these factors add up to a major nightmare for IS. In fact, the problem has become so severe that some organizations are postponing hardware upgrades simply because of the high cost of associated software charges.

But Len Charney, who runs the data center at ISM Information Systems Management, a $370 million outsourcing firm in Winnipeg, Manitoba, notes a more serious consequence.

“[Software] costs have become so high that they, rather than technology or business needs, are driving the information technology industry,” he says. “There are good, useful technologies out there that will never be used because of costs.”

Vendors seem to hear the rumblings. Computer Associates International, Inc. last April instituted new pricing policies, marking a clear shift away from the traditional tiered model. The idea seems to be catching on: In mid-October, Citicorp and CA announced a flat-fee, enterprisewide software pact that analysts say could reshape industry licensing practices [CW, Oct. 19]. Other vendors, notably DEC, also have been active in this area.

While reforms evolve, many IS managers are taking matters into their own hands. They are using a variety of tactics, from simple bargaining with vendors to complex software asset management programs, to cut costs.

“We recommend that users adopt a four-point, bare-bones plan to gain control of software costs during this time of chaos in pricing,” says Bill McNee, a program director at Gartner Group who heads up the consultancy’s software asset management business as well as SWAMI.

Following are brief accounts of successful approaches used by several companies to tackle the problem.

Software asset management

The practice of “software asset management” is emerging as a favored tactic. Basically, this involves doing a systematic, ongoing review of a corporation’s entire software portfolio.

“Often software prices creep up over the years,” says Dick Pasman, an administrator at The Upjohn Co.’s administrative computing center in Kalamazoo, Mich. “Without a thorough audit, those increases often go unnoticed until the user is paying much more than the software is worth to that user’s operation.”

Audits also can uncover redundant software, underused systems or different versions of the same software running on various systems throughout the enterprise.

Possible cost savings

Proponents say that moving all users to the latest version also lets IS consolidate operations, eliminating redundant software while improving service.

The approach seems to work. Upjohn, to name one, says it will save about 10% of its data center budget this year through careful management of software assets, Pasman says.

“We put together a set of spreadsheets, using Lotus’ 1-2-3 on a PC, that let us look at our entire mainframe software inventory at any given point in time,” he explains. “When we checked our inventory over, we realized that we could consolidate our 300E and 3084QX onto a single 600E that is still a Group 40 system and eliminate a great deal of redundant software.”

Today, Pasman estimates the company is saving “a minimum of $450,000” on IBM software and $150,000 on third-party products. “And,” he adds proudly, “we bought the 600E used at a good price. The payback will take less than a year.”

Fare’s fair

Software pricing schemes based on number of users and type of CPU were judged to be fairest by 1,245 worldwide sites

	Fairest	Neutral	Least fair		Fairest	Neutral	Least fair
Based on users	34%	51%	15%	Based on operating system	21%	56%	23%
Based on CPU	31%	43%	26%	Single-level	20%	21%	59%
Usage metering	25%	61%	14%	Based on tiered pricing	11%	73%	16%

Source: Xephon

CW Chart: Michael Siggins

But the company isn’t quitting there. Upjohn has spotted another potential saving in changing IMS monitors from one costing $40,000 a year to a new one priced at $13,600.

Similar cost-savings programs are yielding impressive results elsewhere.

Price caps at Petro-Canada

Petro-Canada in Calgary, Alberta, began its inventory efforts after realizing that maintenance prices were out of hand, says Joan Gallaway, a company specialist in software management.

“Invoices that grew by more than 10% annually sparked talks with vendors to discover why the costs were rising so quickly,” he explains.

Then, Petro-Canada negotiated maintenance price caps for many legacy software products, as well as for new purchase agreements. The company also conducted a thorough software audit as part of a data center consolidation, which Gallaway says eliminated about 15% of its inventory over a period of 18 months.

Centralize purchasing

Another winning tactic, according to IS managers and consultants, is to consolidate all of an organization’s software dealings into a single team.

“Centralize negotiations of all terms and conditions with software vendors,” says Randy Prickett, vice president at Systemantics Information Services, Inc. in Little Rock, Ark., a large outsourcing company.

“Pick a standard product and stick with it across data centers. That lets you standardize training, terms and conditions and gets you volume discounts from vendors.”

Savvy IS managers note that software vendors are more likely to offer incentives if they know the team making the initial deal is likely to buy more products for the whole corporation over time.

“We have reaped incredible dividends by putting things like transferability, which lets us transfer software to a new site during data center consolidations, and multiple-client clauses in our contracts,” Prickett says.

Physical condition a key

Experienced hands add that it’s an excellent idea to keep good physical software contract files. Once old contracts are lost, they warn, IS is vulnerable to vendors who might try to reinterpret or change contracts — particularly after the original supplier has been bought out by another firm.

“Just having someone on your staff who pays attention to software management issues is half the battle,” Prickett concludes. “Once your company decides to enforce centralized software, you are 80% there.”

Tracking software — hard enough on the mainframe — is regarded by many shops as impossible in the huge population of desktop systems.

Yet Mike Starke, the manager responsible for PC software at US West Communications in Bellevue, Wash., has devised a method to make the assignment a bit more manageable.

“We work off an approved list of vendors and products endorsed by our advanced technology people,” he explains. “Since we record everything that we purchase in a database, we know what we have.”

Not every product is tracked, but those that are get handled by a vendor contracted for the chore. “We have the best of both worlds,” he says. “The distributor and software publisher are satisfied that the application is being used according to the agreement. And we do not have to maintain a large staff just to keep track of it.”

Denver-based US West has direct relationships with publishers of its standard software but buys through distributors, in part to get local support.

The firm also was one of the first buyers to negotiate a “master disk” arrangement, which lets distributors make copies of software for the company as the need arises. Documentation is supplied under a separate process. “We find that on average we need one set of documentation for every 20 licenses,” Starke says.

The overall result, Starke says, is an orderly arrangement that is far preferable to maintaining a warehouse full of unopened boxes of software bought in anticipation of expected demand.

Get close to your vendor

Now that traditional pricing models are breaking down, experts say it is more important than ever to pick the right software vendor and work closely with it. The reason?

You might be able to have a bigger impact on future pricing policies than you imagine.

New technologies such as Network License Manager and other technical licensing software packages have begun to enter the market.

Thus, suppliers are looking for new ways to price software, giving IS a unique chance to work with them in creating new pricing models.

Making friends beneficial

Forging close relationships with strategic vendors can be rewarding in several ways, says Richard L. Johnson, financial analyst in the Software Asset Management Group at Phillips Petroleum Co. in Bartlesville, Okla.

Johnson created the software asset management function at Phillips seven years ago, making him one of the most experienced people in this area today.

“By partnering with strategic vendors, we can get a better sense of the direction of the technologies and pick those that match direction,” he says.

Once such relationships are established, Johnson continues, contract time periods for all software from a vendor can be made “co-terminous,” creating less administrative cost for both user and vendor.

“I can renew all our software from a particular vendor at one time,” he explains. “It all comes on one invoice to one address and is processed once. The vendors seem to like that better because they have a central contact for all contractual questions. They pass some of their savings in administration back to us.”

Bargaining

Finally, IS managers say not to underestimate what a little old-fashioned wrestling with vendors can accomplish.

At ISM, for example, Charney successfully bargained with software vendors during a recent systems expansion. ‘

‘We upgraded from our IBM ES/9000 Model 620 to the 720 when we moved a customer’s computer operations off their systems onto ours,” he explains. “The vendors were willing to listen to my argument that since the partition under which their software ran was no larger than the 620 and served the same population of users, we should not have to pay a tier upgrade charge.”

The result? An estimated savings of $643,000.

But there’s more. By talking another vendor out of charging both a transfer fee and two tier upgrades, and by prepaying maintenance fees on five products, ISM also staved off other fees totaling $93,000. Other miscellaneous deals, Charney says, brought total savings to nearly $800,000.

At Motorola, Ackmann adds that it’s important to look beyond purchase costs when negotiating contracts.

“We try to look at the total cost of using something, not just the license fee,” he says. “People try to get the price down and forget that they can probably get a lot of free help from the vendor in implementing the package — and get the savings in cost back twentyfold.”

Latamore is a free-lance writer and laptop publisher based in Burlington, Vt. Maglitta is a senior editor, management.

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Top IS execs: The price ain't right

BY NELL MARGOLIS
CW STAFF

Urged by the lion's share of its information systems leader membership, the Society for Information Management (SIM) is poised to take a public position on the issue of software pricing. The Chicago-based professional organization plans to bring IS managers and software vendors together on — and hopefully beyond — the incendiary issue in a major position paper, according to SIM publicity chairman Alan Singer.

SIM

The formal paper is the first in a series that the 2,500-member group is contemplating in its quest for clout as the collective voice of U.S.-based IS heads. It is planned for release in April, said Singer, senior vice president and worldwide director of information technology at Burson Marsteller.

Last month, SIM formally solicited input from some 100 software vendors, including market leaders such as Legent Corp., Dun & Bradstreet Software, Microsoft Corp. and Computer Associates International, Inc., according to Singer.

That call came in the wake of results of a SIM membership survey in which 94% of the approximately 800 respondents targeted software pricing as an issue for which they want their representative organization to go to bat.

Software licensing for local-area networks was ranked as the highest concern, followed by client/servers and mainframes, as well as midrange computers.

"Darned right it's on my mind — just about every day," one industrial IS member who requested anonymity said at SIM's annual conference last week.

Recession-tightened budgetary constraints and rapidly changing computing paradigms, he said, have joined to make traditional tiered pricing unpalatable to many user companies, his own included.

"But what really brought it home to me," he said, "is all the mergers and acquisitions in the software industry. Realistically, we're left with very few places to turn."

Believe it when I see it

Signs that controversial software giant CA is backing away from reputedly rigid tiered pricing and could even emerge as a role model of customer-tailored license pricing arrangements offered the IS director scant comfort.

"We are a big CA shop, and we have yet to see that flexibility," he said. "We'll believe it if we hear it in our next negotiations with them."

In the meantime, he applauded SIM's move to enter the fray, which he said he voted for in the survey.

Respondents tagged three issues as musts for the position paper to address: tying cost to type of use, controlling increasing maintenance costs and providing the flexibility to move licensed software to a different platform.

The latter has proved a particular bone of contention in outsourcing situations.

Bill Zeitz, SIM software licensing task force co-chairman, said that wish list will be heeded — and with both sides engaged in the debate.

"Developing fair and equitable software licensing methodology is a critical cost factor to many corporations," said Zeitz, who is also director of the IS agricultural group at Wayne, N.J.-based American Cyanamid Co.

"Establishing a good working relationship with vendors is key to success on both sides."

➤**The SoftWare Asset Management Interest Group.** Contact via Gartner Group, Inc. (203) 964-0096.

➤**Open Users Recommended Solutions.** A coalition of vendors and users. Contact Lee Bickmann (203) 325-4528.

➤**Society for Information Management.** International group of high-level IS officials. Contact Dave Laurenzo (312) 644-6610.

➤**The Profit-Oriented Systems Planning Program.** A worldwide organization of information technology executives. Contact Ellen Snoyer (214) 965-1846.

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Feds debate handling of failing IS projects

WASHINGTON, D.C. —When an information systems development project starts to veer off track and is headed for disaster, should management try to steer it back on track or slam on the brakes?

That is the classic management question being debated in the nation's capital after the U.S. General Accounting Office (GAO) criticized a federal agency for failing to hit the brakes. The target was the U.S. Department of Health and Human Services (HHS), which provides oversight and 90% of the funding for the development of child-support enforcement systems in the 50 states [CW, Dec. 2, 1991]. In a recent audit, GAO investigators complained that the development of three "severely flawed" state systems continued for a period ranging from three to eight years, at a total cost of more than $32 million in federal funds, before the projects were stopped and redirected.

Rather than ordering the states to stop and take corrective action when the problems were first identified, HHS officials informed the states of the deficiencies and then continued to fund the systems based on the states' assurances that the problems would be addressed, the GAO report said. The GAO auditors suggested that funding of the three problem-plagued systems should have been suspended until they were fixed. Eventually, the systems had to be scrapped, and the states started over.

However, HHS officials firmly disagreed with the GAO's conclusion. Jo Anne B. Barnhart, assistant HHS secretary for children and families, said HHS prefers a "more constructive" and cooperative approach that emphasizes technical assistance to help states fix their problems. In a few cases, HHS has "judiciously" used its authority to suspend state projects, she said.

Rather than merely accepting state assurances of better days to come, the GAO argued, federal officials must act more decisively. The question remains, however, of how to decide whether an IS project needs a trip to the repair garage or a trip to the junkyard.

MITCH BETTS

CALENDAR

NOV. 15-21

Guide's 1992 Conference. Atlanta, Nov. 15-20 — Contact: Guide International Corp., Chicago, Ill. (312) 644-6610.

Information Industry Association 1992 Annual Conference: Knocking Down Info Walls. San Francisco, Nov. 15-19 — Contact: Information Industry Association, Washington, D.C. (202) 639-8262.

Troubleshooting, Maintaining, Upgrading PCs Seminar. Fort Lauderdale, Fla., Nov. 16-17 — Contact: Quest, Spotswood, N.J. (908) 251-3217.

International Security Systems Symposium and Exhibition. Washington, D.C., Nov. 16-18 — Contact: Krause & Associates, Bethesda, Md. (301) 986-7800.

19th Annual Computer Security Conference and Exhibition. Chicago, Nov. 16-18 — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2200.

C++ World Users Conference. Secaucus, N.J., Nov. 16-20 — Contact: C++ World, New York, N.Y. (212) 274-9135.

Comdex/Fall '92. Las Vegas, Nov. 16-20 — Contact: Comdex/Fall, The Interface Group, Needham, Mass. (617) 449-6600.

ISDN/Broadband '92. Reston, Va., Nov. 16-20 — Contact: Information Gatekeepers, Inc., Boston, Mass. (617) 232-3111.

Transaction Processing Networks Conference. Washington, D.C., Nov. 17-18 — Contact: Telecommunications Reports, Conference Department, Washington, D.C. (202) 842-0520.

The International Computer Training Association. Orlando, Fla., Nov. 17-19 — Contact: International Computer Training Association, New York, N.Y. (212) 355-5049.

Comforum. Orlando, Fla., Nov. 19-20 — Contact: Comforum, Chicago, Illinois (312) 938-3500.

NOV. 22-28

Openforum '92. Utrecht, The Netherlands, Nov. 23-27 — Contact: Uniforum., Santa Clara, Calif. (408) 986-8840.

NOV. 29-DEC. 5

Technical Marketing 2000: Opportunities and Strategies for a Changing World. Washington, D.C., Nov. 30-Dec. 1 — Contact: Technical Marketing Society of America, Torrance, Calif. (310) 534-3922.

European Conference on Hypertext '92. Milan, Italy. Nov. 30-Dec. 4 — Contact: Association for Computing Machinery, New York, N.Y., (212) 869-7440.

Cause '92. Dallas, Dec. 1-4 — Contact: Cause, Boulder, Colo. (303) 449-4430.

The Open O/S Conference. San Francisco, Dec. 2-3— Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

EO/IR Sensors Seminar. Orlando, Dec. 2-4 — Contact: Advanced Technology International, Dept. EO/IR, Washington, D.C. (202) 223-8840.

Corporate Information Mangement Conference (CIM). San Diego, Dec. 3 — Contact: Susan Miguel, IMS, Tiverton, R.I. (401) 683-5760.

Environmental Marketing and Contracting Conference. Washington, D.C., Dec. 3-4 — Contact: Technical Marketing Society of America, Torrance, Calif. (310) 534-3922.

14th ACM Symposium on Operating Systems Principles. Asheville, N.C., Dec. 5-8 — Contact: Association for Computing Machinery, New York, N.Y. (212) 869-7440.

Cause '92. Dallas, Dec. 1-4 — Contact: Cause, Boulder, Colo. (303) 449-4430.

Improving Employee Performance Using Technology. New York, Dec. 2-4 — Contact: BIS Strategic Decisions, Norwell, Mass. (617) 982-9500.

The Migration to Client/Server Computing. Dallas, Dec. 3 — Contact: Infomart, Dallas, Texas (214) 746-3500.

DEC. 6-DEC. 12

Software Support '92. Monterey, Calif., Dec. 6-9 — Contact: United Publications, Inc., Yarmouth, Maine (207) 846-0600.

Supporting and Troubleshooting Windows 3.1 Seminar. Seattle, Dec. 7-8 — Contact: Data-Tech Institute, Clifton, N.J. (201) 478-5400.

Wireless Datacom '92 Exposition and Conference. Boston, Dec. 7-9 —Contact: Communication Events, Norwalk, Conn. (203) 847-5131.

Computer Measurement Group (CMG) '92. Reno, Nev., Dec. 7-11 — Contact: CMG '92, Department 77-5105, Chicago, Ill. (312) 527-6652.

Image World Atlanta. Atlanta, Dec. 7-11 — Contact: Benita Roumanis, Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

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Notes is integrated. Its competitors are patchworks.

Recently, Microsoft® Corporation announced its plans to enhance the Windows® operating system with Windows for Workgroups. We're glad to see another major software vendor follow our lead in serving workgroup needs. But in promoting their announcement, Microsoft presented Windows for Workgroups as an equal to Notes. The facts don't support this claim.

> *"More than any one technology, the value of Notes is in how it is all presented. Simply mail-enabling a bunch of applications will not equal Notes."*[1]
>
> *Stuart Bloom, Vice President, Distributed Systems Solutions*

Specifically, Microsoft claimed that Windows for Workgroups in combination with their database

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Lotus Notes has no peer.

query tool, Access, and their rudimentary development environment, Visual Basic, comprise a functional equivalent to Notes. There is no comparison. Lotus Notes is optimized to handle the vast amount of commonly unstructured information that's normally buried in business forms, proposals and procedures. And its unique "replicated object store" technology slashes the system overhead for sharing that information. Notes is substantially more ambitious than simple send/receive messaging. Microsoft simply has no equivalent.

Microsoft has touted Access, its database query product, as a peer to Notes' data query facilities. However, Microsoft suggests that Visual Basic be used as an adjunct. The fact is, Access with Windows for Workgroups and Visual Basic will provide only a fraction of Notes' workgroup capabilities, in a far more complex and less maintainable package.

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Notes offers buyers of strategic computing resources a fully integrated, proven system that removes barriers to efficient workgroup practices and breaks down obstacles to rapid development of document-based applications. And it does so across multiple platforms, while supporting important established standards.

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> *"Microsoft talks about building blocks, which means that someone has to put the building blocks together."*
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> *Will Fastie, Vice President, Alex, Brown & Sons*

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Want to succeed? Get out of IS for a while

Summit IS VP Gerry Long says you can't really understand applications until you have to use them

Want to know how to go far in information systems? Meet Gerry Long, vice president of Summit Information Systems, the IS subsidiary of Roadway Express, and a 1993 winner of a Society for Information Management Partners in Leadership award (for successful collaboration between a chief information officer and a chief executive officer). Long has some strong ideas about what IS professionals need to do to build successful careers and make a real difference in their companies. He recently spoke with Computerworld *assistant researcher Stefanie McCann about the future of careers in the computer industry.*

Q What kinds of IS people do companies need? What will their needs be?

A What we are looking for are bright folks who really have a focus on the customer. One type of person we don't need is someone who is focused on the technology and thinks of himself as strictly an IS professional.

Q You didn't even think you'd be in this field 10 years ago, did you? Hadn't you moved away from IS, after starting out there?

A Yes. Ten years ago, I thought my career was in manufacturing and my goal was to be a plant manager. I changed because the company I was with was downsizing manufacturing efforts. In 1983, they basically went through the company and took everyone that could spell computer without a K and put us on that project team. Within the next couple of years, I was running the systems organization.

Q So how did you get into IS to begin with?

A In 1963, everyone took computer aptitude tests, and if you looked like you were able to become a programmer, then you were sent to programming school. Pan Am, where I worked at the time, gave those tests to everyone.

Programming back then was a high-demand but very low-availability skill. People were trained, and you would generally stay with a company for a while and move on because you got your training. Then you went out and tried to leverage that into a bigger job.

I passed the aptitude test, so that's how I got into programming.

Those days don't exist anymore; it's a lot tougher for people getting out of school now.

Q You didn't like programming very much, though, did you?

A I found out very quickly that I wasn't very good at it. I did enjoy the business analysis part and the business management part.

Q What key skills do IS professionals need now? In the future?

A Basic business analysis and interpersonal skills are needed now — desperately. In the future, we need to enhance those basic skills with cross-functional understanding of business functions. If your background has been in IS and accounting functions, you are able to sit down with the transportation department and understand where logistics fit in and what kind of impact the accounting function may have on logistics — so you can start to see where the opportunity for improvement across the functions will be.

Q How did you go about gaining cross-functional perspective?

A I spent eight years as a materials manager. I was the user of computer systems, rather than a developer. That gave me a very different perspective on what role IS ought to be playing.

Q Where do you see the future of programmers?

A I think programmers will be around a lot longer than many people think. As long as I have been in this business, I've heard people talk about eliminating programming as a function. I don't see that happening. I think there is going to be a continual need for the human/machine interface, and that role will be filled by programmers. I do expect that they'll become less technically oriented and perhaps become more dispersed out in the business functions.

Gerry Long: *'Basic business analysis and interpersonal skills are needed now — desperately'*

Q What kind of advice could you offer to people wanting to climb the IS ladder?

A Learn the business — whichever function you have .the most interest in other than information technology. You assume people in IS who have selected it already like the technology piece and are going to learn that part, but they need to select another part of the business and to learn to support it.

If they like the financial arena rather than just understanding what it takes to put together general-ledger programs or cash-management programs, they ought to understand the theories of cash flow, cash management, what the difference is between finance and accounting and where auditors are looking for data.

Q Doesn't developing an application teach you as much as you really need to know about the business function?

A Not really. Right after completing a new inventory control system, I was named manager of inventory control. That is a very sobering event for someone in systems; I had to run a system that I developed and designed. You find out where your weak spots are. It was an excellent learning experience.

Q What pitfalls would you say IS professionals should avoid?

A Avoid a narrow, bigoted adherence to a particular technology. Bigoted is a strong word, but you find people who are distributed systems bigots, or microcomputer bigots, whose minds are closed to all other possibilities. These people generally don't get too far.

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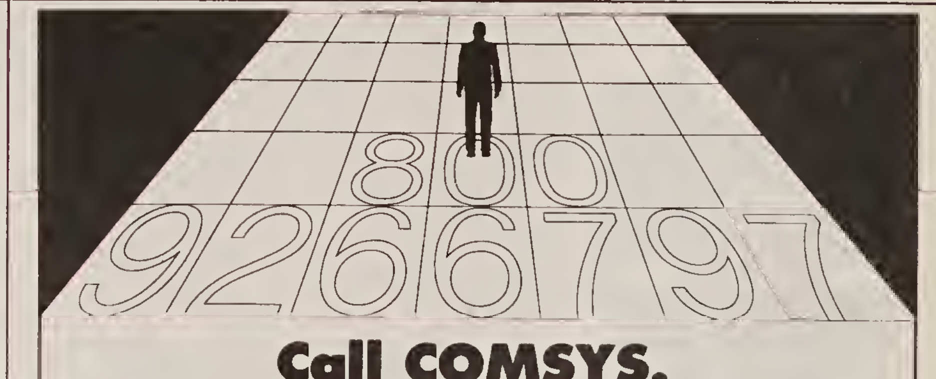

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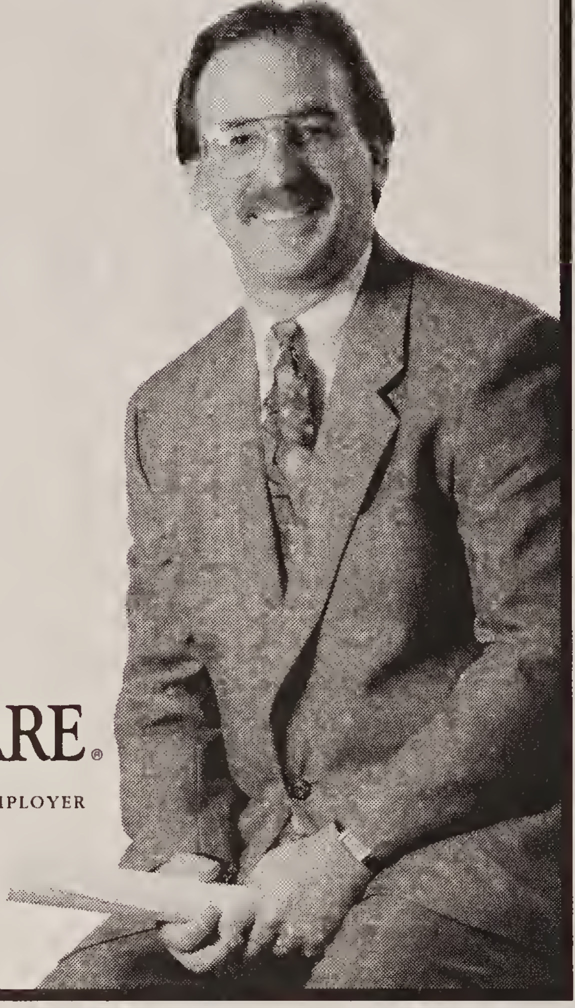

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INDUSTRY CURRENTS

Client/server, integration skills Rx for success in health care

BY EMILY LEINFUSS
SPECIAL TO CW

Some information systems professionals in the health-care field are having the plug pulled on their careers, but those with up-to-date skills are getting a healthy shot in the arm.

"There are the same number of jobs available, but companies are laying off people with old skill sets and hiring new ones," says Suzanne Fairlie, president of ProSearch, Inc., an IS recruitment firm in the Philadelphia area.

IS managers say they want people who can take mainframes, PCs, image processing and voice response systems and integrate them into one system, Fairlie says.

Diversity is key

This push for integrating departmental islands calls for a diverse set of skills. Requirements range from the business analysis, liaison and data modeling abilities that Fairlie emphasizes to the PC local-area network and client/server know-how that John Cooper, director of data processing at Hillcrest Medical Center in Tulsa, Okla., says is essential.

J. Peter Thielen, manager of systems and programming at the University of Minnesota Hospitals, says he needs people with networking experience. "Health-care administrators are starting to understand the value of having a medical chart on-line so health-care practitioners, medical records people, billing people and private doctors' offices can simultaneously have access to it," he says.

Hospitals, health-maintenance organizations (HMO) and home-care providers are using technology to improve the loop between providers and insurers by developing systems that can simultaneously access on-line patient information. This improves patient care because it results in speedier access to more accurate information. It also enables claims to be processed faster and more efficiently.

Home-care providers offer the best IS opportunities in the health-care industry. Although they represent a much smaller market overall than HMOs and hospitals, these companies are expanding their systems development efforts and are actively seeking to fill IS positions.

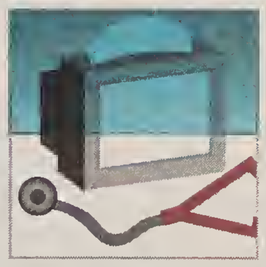
Until now, "home-care companies have not invested much in systems. As a result, we seem to be climbing the curve as our company starts to invest more heavily in systems development," says Jim McCloud, IS director at Homedco, Inc., a home-care provider in Fountain Valley, Calif.

Allan Crommett, director of MIS at home-care provider Care Enterprises, Inc. in Tustin, Calif., is also looking to fill IS slots.

But Crommett stresses the human side of the job. "All things being equal in technical skills, we will take someone with less experience but more enthusiasm for dealing with people," he says.

All the right skills

Fairlie recently placed three people in senior positions in health care. Their backgrounds illustrate the industry's needs. One had a very strong financial systems development background. Another had materials management savvy that could translate well to hospital materials management, and the third knew integrated systems.



The story is slightly different for HMOs than hospitals because hospitals had a head start in developing crucial systems. HMOs are trying to catch up and therefore have more development work to accomplish, says David Hamilton, director of applications at Harvard Community Health Plan in Boston.

"We are hiring programmer/analysts and project managers, and they are either in traditional mainframe Cobol arenas or in relational database areas," Hamilton says.

HMOs are also beginning to develop clinical information systems.

"As an industry, we have not done a lot in terms of clinical information systems, and there is not much offered by vendors. That makes a lot of opportunity, either with vendors of health-care systems or the HMO directly, to develop those systems," says Bill Reed, senior vice president of operations at Geisinger Systems Services in Danville, Pa.

A person with a health-care background will go far in this industry, even in systems development. Knowledge of health care is even more important than knowledge of new technologies, according to Reed.

He says it's easier to teach a nurse to be a systems analyst than to instruct systems analysts on everything they need to know about nursing.

However, Reed says, taking a course in hospital administration, any clinical specialty or attending industry-specific conferences can help IS professionals break into the health-care industry.

Leinfuss is a free-lance writer based in Sarasota, Fla.

The pulse of the industry

Best opportunities: While IS professionals agree that major metropolitan areas offer the majority of IS employment opportunities in health care, more than one says that if he lost his job, he would try Texas.

In fact, J. Peter Thielen, manager of systems and programming at the University of Minnesota Hospitals, earmarks Chicago, Pennsylvania and the South as hot spots for health-care jobs because colleagues in those areas say they are launching new IS projects.

Salaries: Midlevel programmer analysts, systems analysts and project managers with three to five years' experience can expect to earn somewhere between $35,000 and $48,000 at HMOs and home-care providers, depending on their skills and geographical location. Hospitals pay less, with a range from $20,000 to $40,000.

Hottest job titles: The hottest job title in health care is applications development programmer, says Richard Taylor, president of ExecSource, Inc., an IS placement firm in Arlington, Texas. Other hot jobs in health care are client/server manager, database manager and systems integrator.

Technical skills needed: Client/server skills are in great demand. So are DB2 and relational database skills and PC LAN experience. Also, people with any kind of clinical systems experience will go far.

EMILY LEINFUSS

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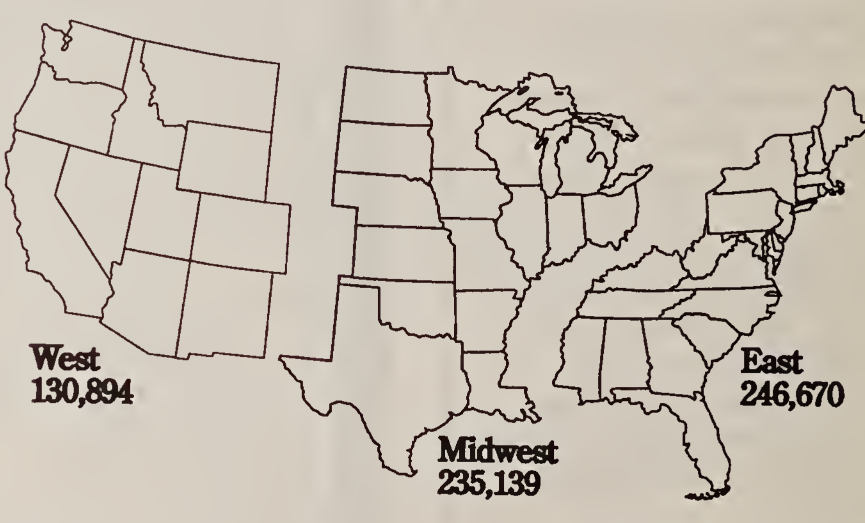

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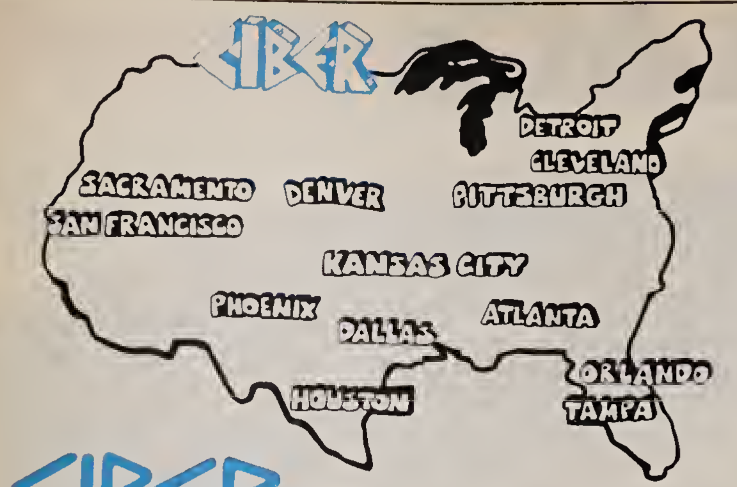

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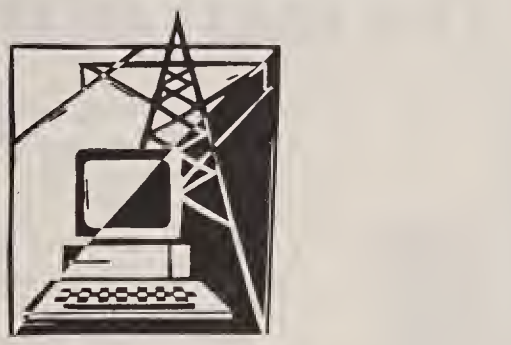

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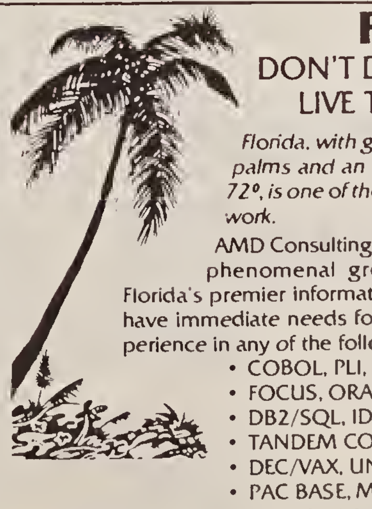

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MARKETPLACE

Don't let mail order take you to the bank

BY TODD HENSCHELL
SPECIAL TO CW

When purchasing PCs and related peripherals by mail, it pays to ask the right questions before placing the order. While there are hundreds of questions to ask, some basic ones are important in any purchase.

Q Does a system advertised at a low price have the functions to meet my business needs?

A Mail-order ads often list prices for a basic system, so it pays to ask about things such as memory capacities, disk space, types of video boards and monitor quality.

"We make sure that the price the vendor quotes is the price of the entire system," says Ben Chiu, president of Jensen Gema-Volstatic, a designer of turbochargers. "A mail-order vendor might charge $2,300 for a complete CAD system, but you can't successfully use the system without adding some things."

Q What happens if the system arrives broken or in otherwise poor condition?

A Every vendor has different return policies, and it's up to you to ask. Some will never return your money. Others will take their system back within a reasonable period and quickly refund the purchase price.

If a dealer chooses to fix the system rather than replace it, find out how long it will take. For a more realistic turnaround time, double the figure the dealer gives you.

When prodded, some vendors will ship a replacement unit before you ship back the broken one. If they send you one on time, consider yourself blessed.

The same goes for problems with missing components or incorrectly shipped items. The vendor should send out repair or replacement parts within 24 hours.

Whatever the terms are, have the vendor fax you a copy of the return and repair policy before you plunk down money.

Q What kind of product and technical support does the vendor offer?

A The better mail-order vendors have 24-hour, toll-free support. If it's a local firm, this may not be important, but if it's 2,000 miles and three time zones away, technical help during your work day is priceless.

Call the vendor prior to placing the order to find out how well-staffed its support lines are: Call once during normal business hours and again during nonpeak hours. Some firms cut corners by having fewer support technicians during off hours.

If you can't get through during a test call, chances are you'll be stuck later when you really need help.

Q What happens if I want to expand or upgrade my system with an add-in board?

A You may find your options limited if the system you purchase does not use generic parts.

This can be particularly troublesome with laptops. Some manufacturers use generic parts but alter them just enough so the standard parts won't work.

If your firm typically keeps systems for more than three years or upgrades them often, you may want to ask whether you can replace parts with standard equipment.

Q Does the vendor offer a hardware upgrade path?

A Some mail-order companies offer a built-in upgrade path; however, the proprietary components used by certain manufacturers are sometimes so costly that the upgrade option isn't worthwhile.

Other firms have priced their CPU modules and local bus boards very aggressively, making them attractive for a growing company. Look for systems with Intel Corp.-compliant local bus designs and reasonably priced CPU modules.

The disk subsystems, memory and monitor are the majority of the cost of a PC, so a fairly priced option to upgrade a 386 to a 486 or a P5 and beyond can save you money.

Generous manufacturers may even give you a discount for returning your old CPU modules or boards when you upgrade, if you ask for it.

Q Does the company make substitutions when it is short of stock?

A Certain product features may not match those in the advertisement. Changes are usually limited to minor features such as equipment cases, but important items such as the brand of tape drive, floppy drive or video board can also be swapped. For example, Cathryn Jaymes, owner of Jaymes & Company Management in Los Angeles, ordered PCs with a certain video board and "ended up with a much slower board instead."

A safe bet is to pin down the fine details before filling out the order form.

Henschell is a PC consultant and a free-lance writer based in Burbank, Calif.

Don't forget to. . .

- Put the purchase on a company credit card if you can. If you have a problem with maintenance or a missing part that isn't easily resolved, the credit card company can stop payment while it investigates the problem; it may even reimburse you.
- Ask for a brand-name item if you want it. Mail-order vendors may throw it in even when it is not normally part of its product line. Commonly swapped brand-name items include hard disks, video boards and floppy and tape drives.
- Find out how much the vendor charges for extra memory or a bigger hard disk. A common practice of little-known vendors is to sell stock systems with practically no memory and make it up on after-sale purchases.
- Ask whether the warranty will be void if you add anything to the system or open the case during installation.

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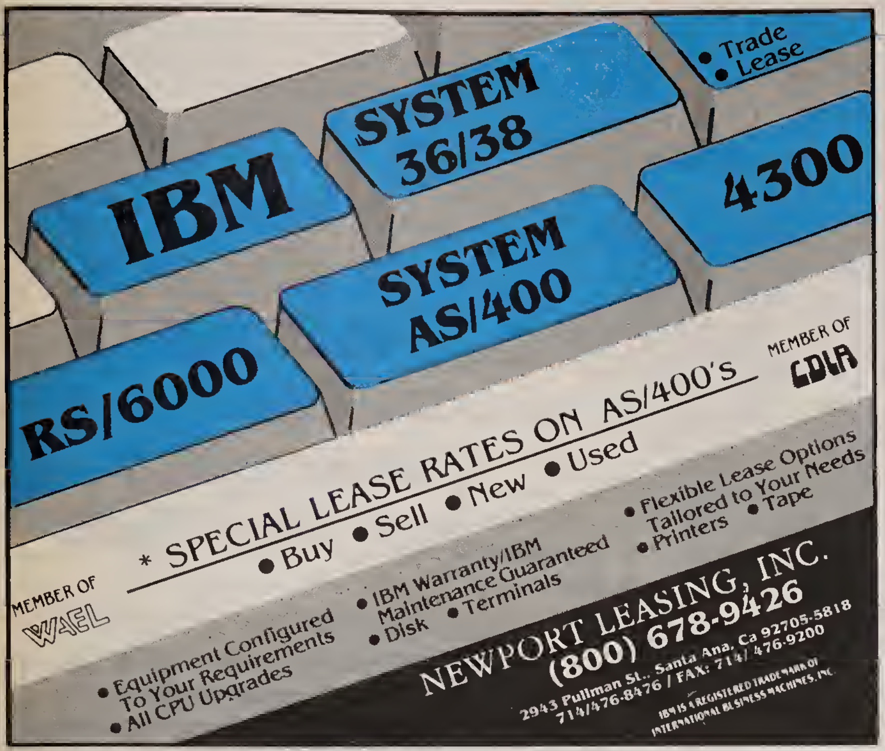

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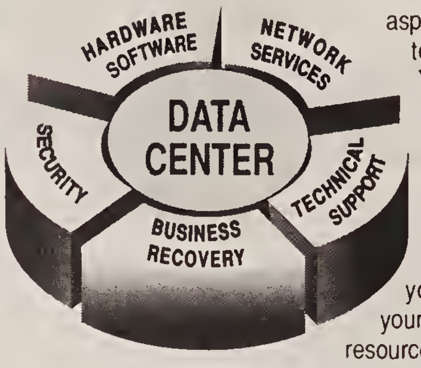

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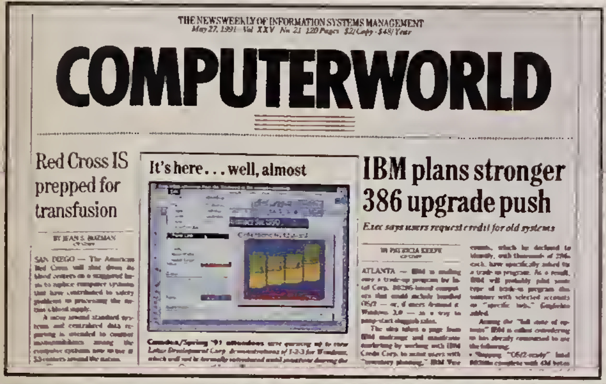

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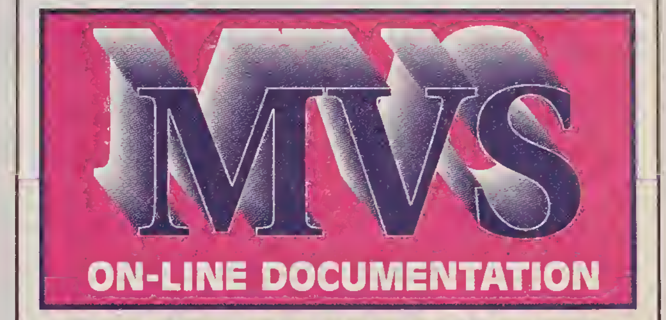

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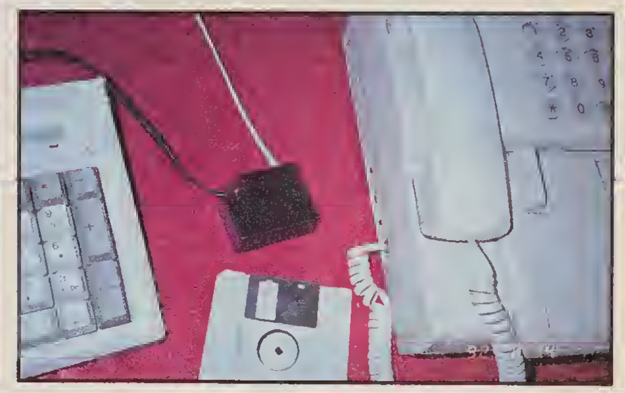

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Street talk

How will tomorrow's election affect computer industry stocks?

"Short term, the effect on computer stocks will be directly related to the effect on the overall stock market. Long term, certainly one of the candidates seems to be saying more positive things about technology than the others, but we'll see how that goes."

Laura Conigliaro
Prudential Securities, Inc.

"Most of the effect is in the anticipation. People say this or that will change if Clinton is elected, but based on past history, things don't change as fast as people anticipate."

Marty Ressinger
Duff and Phelps, Inc.

Industry Almanac

STEAMROLLER

Analysts blitzed Wall Street with glowing reports following **Microsoft Corp.**'s (MSFT) excellent quarterly results announcement: Revenue went up 41% over the year-ago quarter, and earnings per share rose 40%. The Redmond, Wash., software giant's momentum should continue, though analysts mentioned several significant obstacles it faces in the courtroom and in the marketplace:

- Piper Jaffray, Inc. Vice President David Rothschild said he expects Microsoft's continued growth to be fueled by "business momentum" rather than by specific application releases. An Oct. 15 report awarded Microsoft a Buy rating.

Piper Jaffray expressed doubt that the Federal Trade Commission's investigation of Microsoft will find violations of antitrust laws. Microsoft's leadership on the **Apple Computer, Inc.** Macintosh platform indicates that Microsoft can dominate application sales on operating systems it did not create.

- Analyst Lucianne Painter at Salomon Brothers, Inc. also rated Microsoft as a Buy in a report issued Oct. 16. Salomon Brothers said it expects five key products to drive further revenue growth in the coming year: Windows for Workgroups, the forthcoming Access database system, FoxPro 2.5 for Windows, DOS 6.0 and Windows New Technology.

- A study by Bear, Stearns & Co. of 2,000 computer managers in the U.S. found 90% of the respondents using Windows in some fashion. Windows adoption is causing most of these firms to reevaluate their applications software, giving Microsoft another opportunity for sales. Analyst Louis Giglio gave the stock a Buy rating in an Oct. 16 report.

However, Microsoft's competitors are strongly positioned in some areas. Windows for Workgroups, announced last week, may find tough sledding against **Artisoft, Inc.**'s (ASFT) LANtastic peer-to-peer networking product. Giglio noted LANtastic's technological advantages, including lower resource requirements than Windows for Workgroups, and awarded Artisoft's stock a Buy rating as well.

DEREK SLATER

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, OCTOBER 30, 1992

TOP PERCENT GAINERS

Cray Computer	50.00
Sequoia Systems Inc.	42.86
Dataram Corp.	33.33
Spinnaker Software	33.33
Data Race Inc.	30.17
Boole & Babbage (H)	28.30
Sapiens USA Inc. (H)	27.27
Convex Computer	26.53

TOP PERCENT LOSERS

Microage Inc.	-22.22
Gandalf Technologies Inc.	-17.26
Zeos International Ltd.	-15.38
System Software Assoc.	-14.29
Wordstar	-13.33
Cognitronics Corp. (H)	-12.50
Artel Communication Corp.	-12.47
Everex Systems Inc.	-12.47

TOP DOLLAR GAINERS

Boole & Babbage (H)	5.63
Adobe Systems Inc.	5.13
Northern Telecom Ltd.	4.50
Data Race Inc.	4.38
Storage Technology	4.13
Apple Computer Inc.	3.75
Chipcom Corp.	3.75
Synoptics Communications	3.50

TOP DOLLAR LOSERS

System Software Assoc.	-3.63
Xerox Corp.	-3.00
Matsushita Electronics	-2.63
IBM (L)	-2.13
Microage Inc.	-2.00
Cognitronics Corp. (H)	-1.75
Group I Software	-1.25
Sierra Semiconductor	-1.13

Communications and Network Services Up 2.07%

Exch	52-Week	Range		Oct. 30 Close	Wk Net Change	Wk Pct Change
OTC	21.00	9.63	3 COM Corp. (H)	21.00	2.38	12.75
NYS	70.63	56.25	American Info Techs Corp.	66.75	1.50	2.30
NYS	45.38	32.88	AT&T	43.63	0.63	1.45
OTC	4.25	0.75	Artel Communication Corp.	1.31	-0.19	-12.47
OTC	22.00	10.25	Banyan Systems Inc.	20.13	0.63	3.21
NYS	49.75	40.25	Bell Atlantic Corp.	47.63	1.50	3.25
NYS	55.50	43.38	Bellsouth Corp.	51.75	0.63	1.22
NYS	6.75	3.63	Bolt, Beranek & Newman	4.00	0.13	3.23
NYS	69.25	36.63	Cabletron Systems (H)	68.00	0.00	0.00
OTC	31.00	17.50	Chipcom Corp.	24.25	3.75	18.29
OTC	60.00	23.38	Cisco Systems Inc. (H)	60.00	1.50	2.56
OTC	35.25	5.50	Compression Labs Inc.	10.25	1.00	10.81
OTC	3.38	0.88	Data Switch Corp.	2.00	0.06	3.20
NYS	23.63	13.75	Digital Comm. Assoc.	16.75	1.50	9.84
OTC	15.25	7.75	Digital Systems Int'l Inc.	8.13	-0.50	-5.80
OTC	17.25	3.63	DSC Communications (H)	17.25	2.75	18.97
OTC	10.88	4.75	Fibronix Int'l Inc.	6.50	-0.75	-10.34
OTC	37.50	10.50	Filenet Corp.	16.00	-0.88	-5.19
OTC	3.38	1.13	Gandalf Technologies Inc.	1.50	-0.31	-17.26
OTC	2.25	0.69	Gateway Communications	1.38	-0.19	-12.03
NYS	5.50	2.38	General Datacomm Inds.	4.00	0.13	3.23
ASE	5.88	0.50	Go Video	2.38	0.00	0.00
NYS	35.75	28.88	GTE Corp.	34.13	0.75	2.25
NYS	70.63	50.00	ITT Corp.	65.13	0.13	0.19
OTC	36.75	25.25	MCI Communications Corp.	36.38	0.13	0.34
OTC	14.50	2.25	Microcom Inc.	3.38	0.00	0.00
NYS	18.25	9.50	Network Equipment Tech.	11.38	-0.88	-7.14
OTC	25.50	8.00	Network General	14.38	-0.13	-0.86
OTC	20.00	8.50	Network Systems Corp.	13.63	0.63	4.81
OTC	24.25	5.63	Newbridge Networks Corp. (H)	23.13	-0.63	-2.63
NYS	49.25	30.50	Northern Telecom Ltd.	38.75	4.50	13.14
OTC	32.50	22.19	Novell Inc.	30.50	-0.50	-1.61
NYS	88.38	69.13	Nynex Corp.	83.88	1.63	1.98
OTC	37.50	14.50	Octel Communications Corp.	20.00	1.00	5.26
OTC	9.88	3.38	Penril Data Comm. Ntwks.	4.25	0.38	9.68
OTC	53.00	10.25	Picturetel Corp.	20.63	1.38	7.14
OTC	18.75	7.00	Proteon Inc. (L)	8.25	0.50	6.45
NYS	30.00	13.88	Scientific Atlanta Inc. (H)	29.88	1.13	3.91
NYS	70.50	56.25	Southwestern Bell Corp.	66.75	1.13	1.71
NYS	26.38	20.75	Sprint Corp.	25.63	0.50	1.99
OTC	21.13	4.88	Standard Microsystems Corp(H)	19.38	0.25	1.31
OTC	61.00	14.50	Synoptics Communications	61.00	3.50	6.09
NYS	40.00	32.88	U S West Inc.	37.25	0.50	1.36
OTC	52.63	24.00	Wellfleet Communications (H)	52.63	2.25	4.47

PC and Workstations Off 1.08%

Exch	52-Week	Range		Oct. 30 Close	Wk Net Change	Wk Pct Change
OTC	13.50	3.50	Advanced Logic Research	4.00	-0.50	-11.11
OTC	70.00	41.50	Apple Computer Inc.	52.50	3.75	7.69
OTC	24.50	11.25	AST Research Inc.	18.25	-0.25	-1.35
NYS	19.25	6.75	Commodore Int'l	7.25	-0.13	-1.69
NYS	42.38	22.13	Compaq Computer Corp.	40.50	2.00	5.19
OTC	35.63	13.91	Dell Computer Corp. (H)	34.13	-0.50	-1.44
OTC	7.75	0.88	Everex Systems Inc.	1.31	-0.19	-12.47
NYS	34.00	21.25	Harris Corp.	33.88	0.13	0.37
NYS	85.00	44.63	Hewlett-Packard Co.	56.88	1.75	3.17
NYS	29.75	14.13	Silicon Graphics	24.75	1.13	4.76
OTC	35.88	20.75	Sun Microsystems Inc.	35.25	3.25	10.16
NYS	31.25	22.25	Tandy Corp.	26.50	-0.25	-0.93
NYS	11.13	5.50	Zenith Electronics	5.75	-0.13	-2.13
OTC	25.50	2.75	Zeos International Ltd.	4.13	-0.75	-15.38

Large Systems Up 7.26%

Exch	52-Week	Range		Oct. 30 Close	Wk Net Change	Wk Pct Change
ASE	20.63	7.75	Amdahl Corp.	8.13	0.25	3.17
NYS	16.38	4.75	Convex Computer	7.75	1.63	26.53
OTC	17.88	1.88	Cray Computer	5.25	1.75	50.00
NYS	52.25	19.00	Cray Research Inc. (L)	21.25	0.88	4.29
NYS	18.13	7.13	Data General Corp.	10.75	-1.13	-9.47
NYS	65.50	32.88	Digital Equipment Corp. (L)	33.75	-0.13	-0.37
NYS	101.38	65.00	IBM (L)	66.88	-2.13	-3.08
OTC	13.25	5.50	Kendall Square Research	7.75	0.00	0.00
NYS	119.25	88.25	Matsushita Electronics	91.00	-2.63	-2.80
OTC	17.50	6.00	Pyramid Technology	8.75	-0.25	-2.78
OTC	17.88	9.88	Sequent Computer Sys.	14.63	-1.00	-6.40
OTC	18.38	2.75	Sequoia Systems Inc.	5.00	1.50	42.86
NYS	54.25	29.50	Stratus Computer Inc.	32.63	-0.75	-2.25
NYS	15.13	9.50	Tandem Computers Inc.	13.13	2.00	17.98
NYS	11.75	3.63	Unisys Corp.	8.38	-0.13	-1.47
ASE	7.50	0.25	Wang Labs Inc. (b)	0.44	0.00	0.00

Software Up 4.78%

Exch	52-Week	Range		Oct. 30 Close	Wk Net Change	Wk Pct Change
OTC	68.50	25.25	Adobe Systems Inc.	35.63	5.13	16.80
OTC	44.25	10.25	Aldus Corp.	16.00	1.50	10.34
OTC	19.75	7.00	American Software Inc.	8.25	0.13	1.54
OTC	20.00	9.75	Ask Computer Systems	16.13	-0.50	-3.01
OTC	53.00	23.25	Autodesk Inc.	50.75	-0.25	-0.49
OTC	37.75	3.75	Bachman Info. Systems	5.50	1.00	22.22
OTC	42.50	32.00	BGS Systems Inc.	38.50	1.00	2.67
OTC	79.00	37.25	BMC Software Inc.	60.00	1.63	2.78
OTC	25.50	11.88	Boole & Babbage (H)	25.50	5.63	28.30
OTC	86.75	25.25	Borland Int'l Inc.	34.25	2.25	7.03
OTC	11.00	3.63	CE Software	3.75	-0.25	-6.25
ASE	27.25	8.66	Cheyenne Software Inc. (H)	27.25	3.25	13.54
OTC	13.38	5.63	Cognos Inc.	5.88	0.13	2.17
NYS	18.13	8.63	Computer Associates (H)	17.50	0.00	0.00
NYS	12.38	4.75	Computervision Corp.	6.00	1.00	20.00
OTC	20.00	6.75	Comshare Inc.	10.25	1.25	13.89
OTC	47.88	6.00	Easel Corp.	6.75	0.00	0.00
OTC	25.00	11.50	Group I Software	13.00	-1.25	-8.77
OTC	6.63	3.50	Hogan Systems Inc.	5.88	0.88	17.50
OTC	36.25	18.50	Information Resources	27.75	0.00	0.00
OTC	31.00	5.88	Informix Corp. (H)	28.75	1.38	5.02
OTC	22.38	11.50	Intergraph Corp.	13.00	0.00	0.00
OTC	15.00	7.00	Interleaf Inc.	11.63	-0.13	-1.06
OTC	20.25	10.25	Intersolv Inc.	14.88	-0.88	-5.56
OTC	21.38	9.50	Knowledgeware Inc.	13.25	1.25	10.42
OTC	48.25	28.75	Legent Corp.	44.50	1.38	3.19
OTC	38.75	14.75	Lotus Development	20.13	0.88	4.55
OTC	7.38	1.88	Meca Software	2.75	0.00	0.00
OTC	22.25	5.25	Mentor Graphics	7.25	0.00	0.00
OTC	37.38	27.25	Micro Focus (H)	36.63	0.00	0.00
OTC	20.50	6.50	Micrografx Inc.	9.75	1.25	14.71
OTC	90.25	60.50	Microsoft Corp. (H)	88.75	0.13	0.14
OTC	23.38	12.00	Oracle Corp. (H)	22.25	-0.88	-3.78
OTC	53.25	19.63	Parametric Technology	51.00	1.50	3.03
OTC	11.00	3.50	Phoenix Technologies	4.00	-0.50	-11.11
OTC	25.25	11.25	Platinum Technology	19.25	1.00	5.48
OTC	55.50	29.00	Progress Software Corp. (H)	53.50	0.50	0.94
OTC	26.63	4.00	Quarterdeck Office Sys.	5.88	0.13	2.17
OTC	32.75	11.75	Rainbow Technologies Inc.	23.25	1.25	5.68
OTC	22.75	4.00	Rasterops	6.25	0.50	8.70
OTC	17.25	3.63	Ross Systems (L)	5.13	0.13	2.50
OTC	15.75	8.50	Sapiens USA Inc. (H)	15.75	3.38	27.27
OTC	26.25	6.75	Software Publishing Corp.	9.13	0.75	8.96
OTC	8.50	2.00	Software Toolworks Inc.	4.00	0.63	18.52
OTC	7.25	0.75	Spinnaker Software	1.50	0.38	33.33
OTC	16.50	3.25	State of the Art	5.75	-0.50	-8.00
NYS	25.25	13.75	Sterling Software Inc.	19.50	1.38	7.59
OTC	30.00	8.00	Struct. Dynamics Research	11.00	0.25	2.33
OTC	41.75	16.25	Sybase Inc.	41.75	1.88	4.70
OTC	51.00	5.88	Symantec Corp.	12.63	0.88	7.45
NYS	15.50	5.25	Systems Center Inc.	6.88	-0.13	-1.79
OTC	34.25	13.00	System Software Assoc.	21.75	-3.63	-14.29
OTC	13.25	2.50	Trinzic Corp.	3.88	0.25	6.90
OTC	23.75	14.50	Walker Interactive Systems	18.63	-0.38	-1.97
OTC	5.88	1.50	Wordstar	1.63	-0.25	-13.33

Semiconductors Up 2.67%

Exch	52-Week	Range		Oct. 30 Close	Wk Net Change	Wk Pct Change
NYS	21.50	7.38	Advanced Micro Devices	16.50	2.13	14.78
NYS	12.00	7.13	Analog Devices Inc. (H)	12.00	0.50	4.35
OTC	13.75	6.75	Atmel Corp. (H)	13.50	0.75	5.88
OTC	14.13	3.25	Chips and Technologies	4.00	0.13	3.23
NYS	19.63	7.38	Cypress Semiconductor Corp	9.38	0.75	8.70
NYS	12.88	6.75	Dallas Semiconductor	12.00	-0.38	-3.03
OTC	69.13	39.75	Intel Corp. (H)	67.50	0.38	0.56
NYS	9.88	4.88	LSI Logic Corp.	8.00	1.00	14.29
NYS	22.38	12.13	Micron Technology	19.38	0.13	0.65
NYS	97.75	57.50	Motorola Inc. (H)	96.00	0.75	0.79
NYS	13.63	4.88	National Semiconductor (H)	12.25	-0.88	-6.67
OTC	27.00	8.25	Sierra Semiconductor	12.13	-1.13	-8.49
NYS	50.50	26.00	Texas Instruments (H)	49.13	0.38	0.77
OTC	10.50	6.00	VLSI Technology	7.50	0.25	3.45
OTC	7.00	2.13	Weitek	4.88	-0.25	-4.88
ASE	7.25	2.00	Western Digital Corp. (H)	6.88	0.38	5.77
OTC	31.00	14.50	Xilinx	18.75	1.25	7.14
OTC	33.50	15.00	Zilog Inc. (H)	30.50	0.25	0.83

Peripherals and Subsystems Up 5.30%

Exch	52-Week	Range		Oct. 30 Close	Wk Net Change	Wk Pct Change
OTC	11.13	3.50	Archive Corp. (H)	10.63	0.13	1.19
OTC	26.75	13.75	Banctec Inc.	24.75	0.13	0.51
OTC	23.50	9.25	Cambex Corp.	14.75	2.75	22.92
ASE	14.50	5.66	Cognitronics Corp. (H)	12.25	-1.75	-12.50
NYS	23.88	12.50	Conner Peripherals	19.75	1.00	5.33
OTC	18.88	14.25	Data Race Inc.	18.88	4.38	30.17
ASE	19.66	4.75	Dataram Corp.	8.00	2.00	33.33
NYS	24.00	8.38	EMC Corp. (H)	23.38	0.50	2.19
OTC	8.38	4.75	Emulex Corp.	6.25	0.00	0.00
OTC	23.00	13.25	Evans & Sutherland	17.25	1.50	9.52
OTC	40.63	12.00	Exabyte	15.13	-1.13	-6.92
OTC	34.00	15.75	Intelligent Info. Systems (H)	33.63	1.13	3.46
OTC	11.25	4.75	Iomega Corp.	7.50	1.25	20.00
OTC	34.75	10.25	IPL Systems Inc.	12.50	1.25	11.11
OTC	21.25	10.75	Komag Inc.	19.00	-0.25	-1.30
OTC	15.63	4.38	Maxtor Corp.	14.38	1.25	9.52
OTC	12.63	6.38	Micropolis Corp.	7.25	-0.88	-10.77
NYS	105.13	85.38	3M Co. (H)	102.88	-0.25	-0.24
OTC	6.75	3.50	Printronix Inc.	4.75	-0.25	-5.00
NYS	24.38	6.88	QMS Inc.	7.75	-0.38	-4.62
OTC	18.00	8.88	Quantum Corp.	13.00	-0.25	-1.89
OTC	12.75	3.75	Radius Inc.	6.00	0.75	14.29
NYS	12.88	6.50	Recognition Equipment	12.63	1.63	14.77
OTC	13.13	5.63	Rexon Inc.	10.88	0.13	1.16
OTC	17.63	7.75	Seagate Technology	14.88	0.00	0.00
NYS	78.00	21.00	Storage Technology	29.63	4.13	16.18
NYS	23.38	16.00	Tektronix Inc.	21.13	0.00	0.00
NYS	82.25	60.25	Xerox Corp.	74.25	-3.00	-3.88

Services Up 1.45%

Exch	52-Week	Range		Oct. 30 Close	Wk Net Change	Wk Pct Change
OTC	21.75	11.66	American Mgmt. Systems (H)	21.75	0.88	4.19
NYS	5.38	2.88	Anacomp Inc.	3.75	0.25	7.14
OTC	21.25	12.50	Analysts Int'l	21.25	1.25	6.25
NYS	49.00	36.13	Auto Data Processing	48.38	0.88	1.84
NYS	16.38	7.06	Ceridian Corp. (H)	16.38	1.25	8.26
NYS	23.44	12.50	Comdisco Inc.	15.13	0.38	2.54
OTC	13.50	7.00	Computer Horizons (L)	7.50	0.25	3.45
NYS	84.88	57.00	Computer Sciences	69.75	3.25	4.89
NYS	10.13	7.00	Computer Task Group	7.75	-0.25	-3.13
OTC	40.50	15.00	CompUSA Inc.	39.25	-0.25	-0.63
OTC	19.25	6.00	Corporate Software	10.88	0.25	2.35
OTC	30.75	7.75	Egghead Discount Software	10.00	2.00	25.00
NYS	33.06	25.25	General Motors E (EDS)	29.00	0.38	1.31
OTC	30.38	6.25	Intelligent Electronics	10.75	-1.00	-8.51
OTC	14.88	6.63	Merisel	10.13	1.13	12.50
OTC	15.75	7.00	Microage Inc.	7.00	-2.00	-22.22
OTC	35.75	17.66	Paychex (H)	34.00	-1.00	-2.86
NYS	77.25	55.00	Policy Management Sys. (H)	75.00	0.00	0.00
NYS	45.38	27.88	Reynolds and Reynolds (H)	45.38	1.25	2.83
OTC	32.00	22.00	SEI Corp.	27.25	-0.38	-1.36
OTC	24.38	16.88	Shared Medical Systems	21.63	-0.50	-2.26
OTC	30.00	16.00	Sungard Data Systems	29.00	0.25	0.87
NYS	3.63	1.13	Ultimate Corp.	1.25	-0.13	-9.09

KEY: (H) = New annual high (L) = New annual low

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IN BRIEF

EDI profits up 15%

■ Spurred by growth in its non-General Motors Corp. business, **Electronic Data Systems Corp.** last week posted third-quarter net income of $167.3 million, a 15% increase from the year-earlier period. Revenue at the Dallas company rose 19% to $2.06 billion in the quarter ended Sept. 30.

■ Reversing two consecutive losses, **Data General Corp.** reported a fiscal fourth-quarter profit of $2.7 million, compared with a $9.9 million loss for the same period last year. Revenue for the quarter, however, was off 2% from the fourth quarter of 1991 but up 11% from the previous period.

■ **Legent Corp.** posted fourth-quarter operating profits of $27.7 million, up 67% from the year-earlier period. A onetime charge of $34.5 million to cover the acquisition of **Goal Systems International, Inc.** turned the profit into a $7.6 million net loss, however. Revenue for the period grew 20% to $124.4 million in the period ended Sept. 30. For the full year, the Vienna, Va., company posted profits of $27.7 million on revenue of $426 million.

■ **Tandem Computers, Inc.** reported fiscal fourth-quarter profit jumped 89% to $27.2 million on revenue of $576.3 million — a 13% hike from the same period last year. The quarterly profit reduced the Cupertino, Calif., firm's fiscal 1992 loss to $41.2 million, compared with profits of $35.2 million last year. Tandem took a $106 million first-quarter pretax charge to cover restructuring costs.

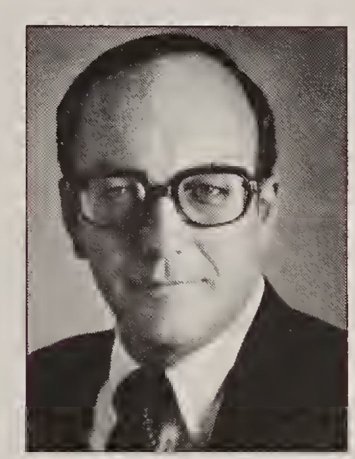
■ Client/server applications upstart **PeopleSoft, Inc.** in Walnut Creek, Calif., filed for an initial public offering last week of 2.7 million shares, to be priced between $12 and $14 each. PeopleSoft booked $32 million in sales for fiscal 1992, up from $17 million last year.

Myriad challenges face new HP CEO

Platt must maintain minicomputer and workstation momentum while pumping up PC business

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — It seems fitting that the Hewlett-Packard Co. executive chosen to take over for 14-year Chief Executive Officer John Young spent his first official day in office en route to Amsterdam. Europe, after all, has been a recent trouble spot for HP, as the company has blamed the Continent in part for the uncharacteristic financial softening that has set in during the last couple of quarters.



Lew Platt *must maintain a smooth management transition*

But Lew Platt's challenges go well beyond getting HP's European house in order. The 52-year-old arrives as the company approaches a landmark juncture in a corporate history rooted in analytical products but branched predominantly in computers.

Platt's most fundamental challenge is to maintain a smooth management transition, a process begun in August. "I feel a lot more comfortable taking over the reins now than I would have three months ago," he said.

Platt takes over following a soft third quarter, during which earnings declined 1% to $191 million on revenue of $4 billion. HP recently instituted a voluntary severance program aimed at cutting 2,700 jobs.

> "IF THERE'S ONE thing that Mr. Platt understands, it's CEO selling. He brings an aggressiveness and sharp suits."
>
> ROBERT HERWICK
> HAMBRECHT & QUIST

But HP has outperformed its competitors through an industry retrenchment, a feat that has not gone unnoticed among rivals. "One of the problems of being one of the leaders is everyone goes after you," said Robert Herwick, an analyst at Hambrecht & Quist, Inc. in San Francisco.

Platt, who is HP's first CEO to come out of the company's computer operations sector, takes over a business that includes three success stories — minicomputers, workstations and printers — and two enigmas — PCs and New Wave.

To help keep a grip on the company's computer operations, Platt is believed to have played a key role in a reorganization that officially took hold yesterday and that eliminated a layer of management between the CEO's office and computer operations.

Platt must now figure out how to sell computers more effectively to a corporate world swept up in downsizing fever. HP has for a long time lived with a gap between high acceptance among eager information systems shops and less impressed corporate executives who sign on the dotted lines.

Rich Sevcik, vice president in charge of HP's minicomputer operations, noted that Platt, who headed HP's computer group, is different from Young, who came out of HP's test and measurement unit. Platt "is a lot more knowledgeable on the intricacies of the computer industry," Sevcik said.

Many users said Platt must improve HP's top-down selling approach. If HP is to successfully take on IBM in the data center, it is up against a formidable opponent — albeit one that is also in the throes of change.

"If they're going to sell directly against IBM, they have to do what IBM does," said Eric Fisher, principal at Fisher Systems Consulting in Groton, Mass. "They have to develop high-level relationships and do top-down selling. Lew Platt has to take the chairman of Bank of America to lunch."

Herwick agreed and said he is optimistic that Platt will strengthen HP's sales savvy. "If there's one thing that Mr. Platt understands, it's CEO selling. He brings an aggressiveness and sharp suits."

By the same token, users pointed out that HP must also raise its profile.

Rodger Lindquist, manager of business systems development at Bio Rad Laboratories, Inc., a Hercules, Calif., maker of diagnostic equipment and reagents, recalled a time while he was IS manager at Dryers Brand Ice Cream when IBM nailed a sale to Dryers. After an initial round of contacts, Lindquist said, IBM "sent in this closer guy" with all the polish and persuasiveness it took to consummate the deal.

New direction

Platt steps in as HP embarks on a mainframe alternative initiative built around Corporate Business Systems, the company's new line of high-end minicomputers introduced in May. The company is marketing the line in two forms: its proprietary MPE operating system and its HP/UX Unix implementation.

As Platt oversees that program, he must continue to maintain a fine balance between promulgating the company's fast-growing Unix line and not alienating HP's traditional MPE customer base (see story page 67). Already, Platt has to cope with product delays. The new systems were to have shipped in the summer, but HP delayed delivery until this month. Platt must drive the company to have the systems ready soon, lest protracted delays hit HP's credibility or sway corporate purchasers to pick a more readily available brand.

At the same time, observers noted, Platt must set realistic goals for the data center assault. Platt said that in "most cases, we will co-exist with mainframes."

To help sell into the data center — and to help move total solution packages into large corporations — HP must also improve its service, integration and support offerings, observers said.

To that end, the company recently announced agreements with integrators Computer Sciences Corp. and Science Applications International Corp. as part of a client/server initiative that also includes dozens of software vendors [CW, Oct. 19]. Sources said Platt was the impetus behind that move.

Meanwhile, users and analysts agreed that Platt must shift HP's PC business into high gear. Platt has already formulated a plan to improve PC sales. He has authorized the company's direct-sales force to offer PCs, marking a switch from the company's indirect-only approach.

The company's New Wave, likewise, has an unclear future as well as an unstable past. A product that HP originally introduced as an operating environment, New Wave is essentially positioned — or at least perceived — as a desktop utility.

"Unless they can find a way to make it an irresistible alternative to people, it's pretty much a dead issue," Fisher said.

HP closes on No. 2

With relatively little notice, HP, Silicon Valley's largest technology company, has grown close to becoming the second largest computer vendor in the U.S.

It may be a bitter pill for the proud denizens of the East Coast to swallow, but this means Digital Equipment Corp. — with 108,000 employees compared with HP's 90,000 — could slip to No. 3.

Is this really happening? It depends how you measure it. HP and DEC are on different fiscal years, with HP's ending Oct. 31 and DEC's ending June 30. Hambrecht & Quist analyst Robert Herwick estimated that on a July 1992 to July 1993 basis, about $13.4 billion of HP's estimated $17.9 billion will come from sales of computers and computer services. For the same period, DEC will tally about $14.3 billion, Herwick predicted.

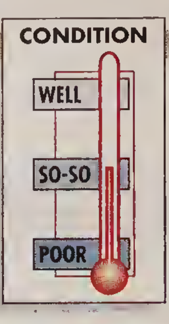
But in that period, HP will sell more computer products than DEC, which derives 47% of its revenue from services and systems integration, Herwick said. He added that HP's service and integration component is about 33%.

On an overall scale of products and services, Herwick said HP "stands a good chance" of passing DEC in 1994. Herwick estimated that HP will tally $16.4 billion in revenue for the year that just ended, and it will report earnings of about $960 million, up from $755 million the previous year.

MARK HALPER

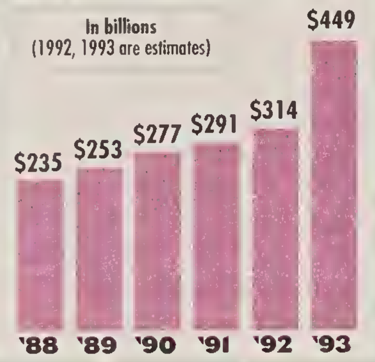
HEALTH Watch

A guide to the health of the computer industry



Heartbeat

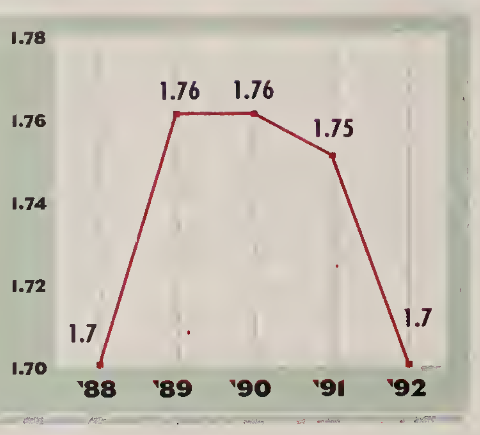
Sales volume for the computer industry



Source: Gartner Group, Inc. Yardstick

Vital signs

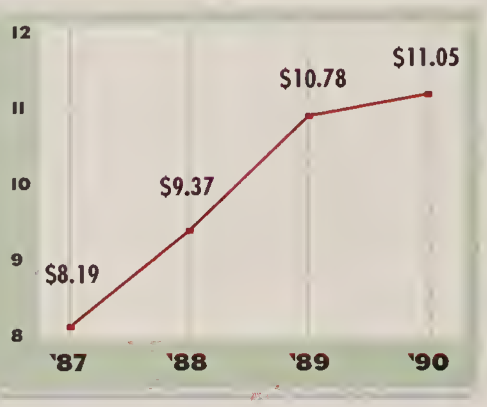
Number of employees in the computer industry (billions)



Source: Bureau of Labor Statistics

In the lab

Computer industry investment in research and development
Federal funds excluded
(in billions)



Source: National Science Foundation

Energy level

Venture capital invested in the industry (in millions)

1989	$1,206
1990	$1,143
1991	$1,023
1992	$281*

*First quarter 1992

Source: Technologic Partners

New rules and regulations

- A major antitrust decision by the U.S. Supreme Court (Eastman Kodak Co. v. Image Technical Services, Inc.) is expected to unleash a slew of lawsuits against bundling practices by computer manufacturers that have shut out third-party maintenance firms.
- The U.S. Environmental Protection Agency's "Energy Star" program is encouraging the computer industry to produce more energy-efficient desktop computers with power-down capabilities.

The 5th Wave

THE FIRST GRAPHICAL USER INTERFACE COPYRIGHT LAWSUIT.
OH HEY-GREAT STUFF, MERLIN! SWIRLING VORTEX, FLAMING SKULL, HARBINGER TOAD-JUST LIKE THE CALDRON USED BY THOSE THREE WITCHES UP ON THE HILL.

INSIDE LINES

The wait continues

Delivery of IBM's AIX DBMS has been delayed until sometime next year, confirmed Don Hederle, director of strategy and architecture at IBM's enterprise database solutions group. The AIX data manager, which IBM had originally promised by last February, "is taking a little longer because we want it to be right," he said. Part of the reason for the delay was because product development was moved from the Personal Systems line of business to the Programming Systems group. Some things don't change, though: Plans are still on for the AIX data manager to have a "common code base" with the OS/2 database manager, Hederle added.

Can't beat 'em, join 'em

Apple has System 7.0 up and running on Intel chips in its labs, one source says, and may finally be serious about getting a piece of the operating system software market in the IBM-compatible world. The source says Apple is still trying to discern the impact such a move would have on its own sales.

High test or unleaded?

AT&T Systems Leasing in Bloomfield Hills, Mich., is getting ready to introduce a new kind of leasing program based on a negotiated per-MIPS rate that would allow customers to quickly add processing power. "You'd lease functionality, not the computer itself," a company spokesman explained. "It's like leasing the mileage instead of the car." Competitor Comdisco already has a similar program.

Working on the railroad

Burlington Northern earlier this year appeared headed toward an outsourcing deal with Perot Systems and then switched tracks to an internal IS overhaul led by consultant Charles Feld. But the story may not be over. Last week, the Fort Worth, Texas-based railway giant held preliminary discussions with former Compaq CEO Rod Canion and his partner, Ron Fisher, both principals at Insource Management Group. Neither party last week would discuss how an Insource deal — if one indeed materialized — would affect or complement Feld's role.

Ahoy, OSI starboard!

DEC is expected to release its long-awaited OSI-based DECnet (also known as Advantage) for VMS in the next couple of weeks. One user said he would just as soon stick with the proprietary DECnet Phase IV except that his network is running out of addresses and the OSI version provides virtually unlimited addressing.

Couldn't be faulted for selling

As fault-tolerant vendor Sequoia Systems struggled with a management shuffle and financial problems, rumors multiplied that the company could soon to be acquired by Hewlett-Packard. HP owns 8% of Sequoia's stock and remarkets Sequoia's systems. Internal sources at Sequoia confirmed that such an acquisition is likely before the end of the year, a statement that was denied by spokesmen at both companies.

Shades of Dan Quayle

If you look closely at OSI documents put out by the International Standards Organization, you will notice that *routing* is spelled *routeing* every time. No, Dan Quayle did not write the ISO's documentation; the story is that one version of the Oxford English Dictionary had the misspelling, and by the time the mistake was corrected, the ISO had already adopted that version of the word as gospel.

Is your aching back helping you forget about your carpal tunnel syndrome? Computer ergonomics resource centers such as Chicago's Backcare Corp. have latched on to the Computer Health Break from Escape Ergonomics in Sunnyvale, Calif. Computer Health Break is a 16K-byte terminate-and-stay-resident program that will pop up on-screen at user-specified intervals and run through several exercises from a list of 70. The product runs on IBM and compatible PCs with DOS 3.1 or higher and costs $79.95. A caveat if your problem is deeply ingrained: The product only helps prevent stress-related body dysfunction; it doesn't cure it. Cure News Editor Alan Alper's need for news tips. Phone, fax or CompuServe him at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

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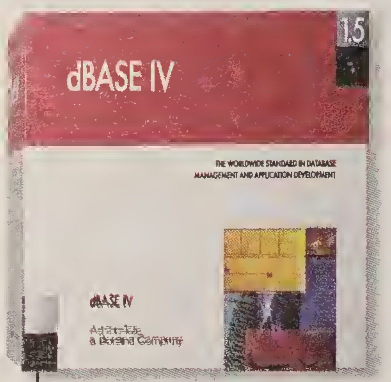

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